Card Access Report Management Application (CARMA) 4.5 for Picture Perfect Administration Guide

UTC Fire & Security

A United Technologies Company

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Chapter 1
Using this manual

Summary

This chapter covers the following topics:

- Who Should Read This Manual
- Related Documentation
- Terminology
- Notational and Typographical Conventions

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Purpose

This manual provides instructions for installation of the Card Access Report Management Application (CARMA), initial setup, and configuration. It also contains information for operating the system once it is installed.

Note: If you have a previous version of this manual, you may notice changes since the last publication marked by a change bar, which is a vertical line in the margin that visually identifies significant new or revised information.

Who should read this manual

This manual is intended for system administrators who are responsible for the planning and implementation of the system design, and who perform system configuration and setup using Picture Perfect forms that are accessible only to the master-level operator.

This manual is also intended for operators of CARMA, and covers the features that are likely to be used on a daily basis.

Operators using the system should read the chapters, which relate to their duties.

The material in this manual has been prepared for persons responsible for, and familiar with the security needs of the customer facility.

Related documentation

Picture Perfect 4.5 User Manual: This manual provides information for the system administrator to set up, configure, and manage the Picture Perfect database for the customer's facility.

Picture Perfect 4.5 Installation Manual: This manual is a step-by-step guide to help the system administrator connect hardware, boot, install, and configure the operating system, and install the Picture Perfect 4.5 software.

Terminology

Click

To “click” means to press and release a mouse button while the pointer is on a designated area of the screen in order to display a window or select an option. The press-and-release makes a clicking sound.

The term “double-click” means to press and release a mouse button twice in rapid succession. “Left-click” and “right-click” mean to click the button on the left or right side of the mouse.

Select

The word “select” indicates that you choose an item from the current menu, submenu, form, or list box displayed on the screen. Use the mouse or the cursor keys to select the item. For example:

Select Devices, then Terminals.

The statement above tells you to select a certain submenu (Devices) and then to select a certain form (Terminals) from that submenu. If you make the selections with a mouse, you will point to the Devices icon and click the left mouse button. When the submenu icons appear, you will point and double-click the Terminals icon to select this form.

If you make the selections with a keyboard, you will use the cursor keys instead of a mouse pointer, and the Enter key instead of the left mouse button.

Press

The phrase “press the _____ button” means to use the mouse (or the keyboard) to “press” a designated button on the screen. To press a button with the mouse, point then click the left button. To press a button with the keyboard, use the TAB key and press Enter or Spacebar.

Command

The word “command” indicates a command, which would be typed as specified.

Notational and typographical conventions

This manual uses certain notational and typographical conventions to make it easier for you to identify important information.

Table 1: Notational and typographical conventions

Item	Example
GUI labels	Administration Menu
Keys	Enter
Buttons	OK

Text you enter	`Micro 1`
	To reduce the confusion between similar numbers and letters, namely the number 1 and the lowercase letter l along with the number 0 and the letter O, refer to the following list:
	`1234567890`
	`ABCDEFGHIJKLMNOPQRSTUVWXYZ`
	`abcdefghijklmnopqrstuvwxyz`

Notes	Notes convey information that emphasizes or supplements important points.
Cautions	Cautions advise you of actions to take or to avoid in order to prevent the loss of data or damage to equipment.
Warnings	Warnings alert you to precautions you should take or actions you should avoid in order to prevent physical injury or loss of life.
Operating system	Linux: Information for a Linux system.

Chapter 2
System overview

Summary

This chapter covers the following topics:

- System Requirements
- Server Requirements
- Firewalls

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Introduction

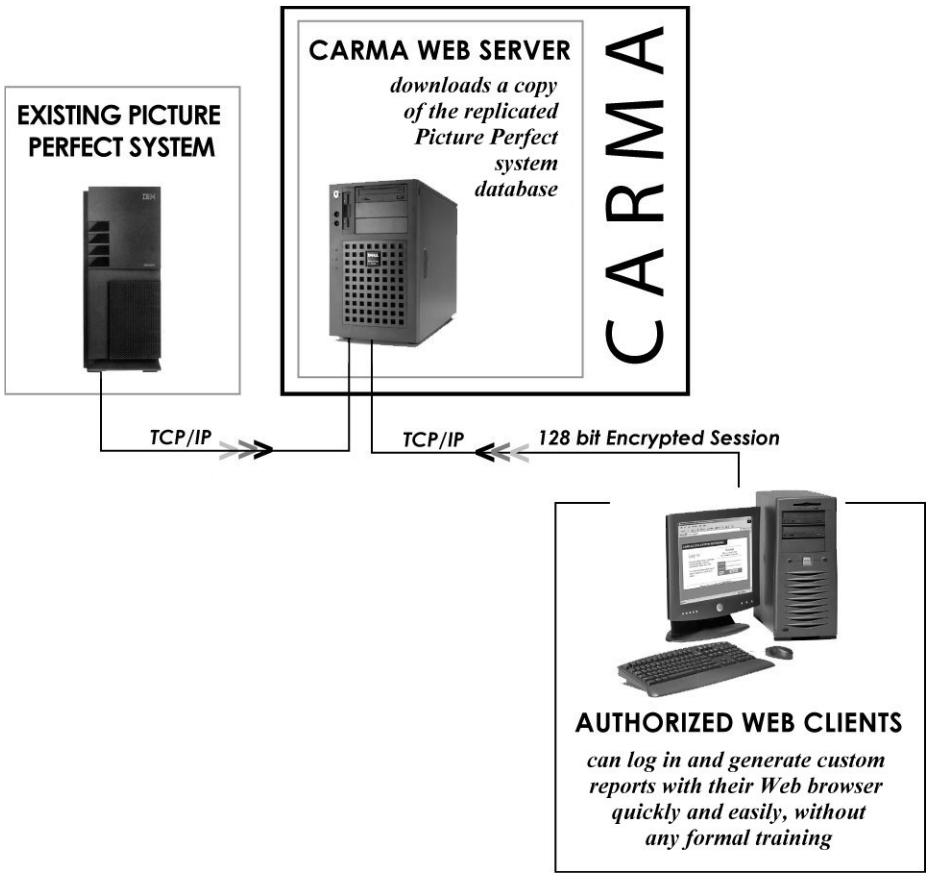
The Card Access Report Management Application (CARMA) is an HTML-based report administration tool designed to allow department managers or other individuals to generate their own card access system reports.

CARMA was designed for speed and ease of use. Several new technologies are introduced to improve report performance and accuracy.

Designed for the UTC Fire & Security Picture Perfect card access system, CARMA lets you search through your cardholder and system database information easier and in ways never before possible with Picture Perfect.

A configuration overview is shown in Figure 1 below.

Figure 1: System Overview


EXISTING PICTURE PERFECT SYSTEM
CARMA WEB SERVER
downloads a copy of the replicated Picture Perfect system database
CARMA
TCP/IP
TCP/IP
128 bit Encrypted Session
AUTHORIZED WEB CLIENTS
can log in and generate custom reports with their Web browser quickly and easily, without any formal training

Using a secure login over an encrypted browser session, you can generate reports including people, badge activity, alarm activity, operator activity, check system status, and more. All database information is replicated from the Picture Perfect host and stored on the reporting server. All features can be accessed using menus, list boxes, and text boxes.

The details of the badge holders and their access history are stored in the Picture Perfect database.

The CARMA Server connects to the Picture Perfect database once a day or as configured and imports a replicated copy of the database via TCP/IP. This import can be forcibly called at any time using the web interface or command line instructions. The duration between two imports must be configured.

The replicated copy of the database is stored in the MySQL database. The CARMA application accesses the MySql database, and then creates the reports.

System requirements

- CARMA 4.5 is compatible with Picture Perfect 4.0, Service Pack 3 or higher
- RedHat Enterprise Linux 4 Upgrade 7 – (Picture Perfect 4.0, SP3)
- RedHat Enterprise Linux 5.3 – (Picture Perfect 4.5)

Server requirements

Since the CARMA server storage requirements are unique to each customer, please contact UTC Fire & Security Sales Engineering for CARMA server requirements.

Firewalls

We recommend that Secure Socket Layer (SSL) be used when firewall traversal is required. In this case, only ports 9088, 1960, and 514 should be configured for Transmission Control Protocol (TCP) between the CARMA and the Picture Perfect hosts. For more information on setting up SSL for use with your CARMA server, please see Chapter 6 “Secure socket layer” on page 111.

Chapter 3
Installation and removal

Summary

This chapter covers the following topics:

- Installing Red Hat Linux
- Installing CARMA
- Removing CARMA

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Introduction

Note: If you are upgrading from a previous version of CARMA, you will need to convert and backup your database prior to installing RedHat Linux. Begin with Chapter 4 “Upgrading CARMA from a previous version” on page 59 and when instructed, return to this chapter.

This section guides you through the installation of RedHat Linux 4, Upgrade 7 and RedHat Linux 5.3 on your CARMA server.

CARMA is compatible with Picture Perfect 4.0 SP3 and Picture Perfect 4.5. If you plan to run Picture Perfect 4.0 SP3, then Red Hat Linux 4, Upgrade 7 is required. If you plan to run Picture Perfect 4.5, then Red Hat Linux 5.3 is required.

If you purchased the server from UTC Fire & Security, it came preloaded. Otherwise, start below and follow the instructions for installing RedHat Linux, and then continue with installing CARMA.

Installing Red Hat Linux 4, Upgrade 7

Note: These instructions assume you are using an official copy of Red Hat Linux Enterprise 4 Upgrade 7 that was obtained from Red Hat, Inc.

To install Red Hat Enterprise Linux 4, Upgrade 7:

1. Insert the Red Hat Enterprise Linux 4, Upgrade 7 Operating System DVD, and then boot the computer.
2. When asked if you want to install Red Hat Linux in graphical or text mode, press Enter to select graphical mode.

   The system performs various tests, probes for devices such as the monitor and mouse, and when finished, displays a Welcome screen.
3. Click Next. The Language Selection screen displays.
4. Choose your Language, and then click Next.

   The Keyboard Configuration dialog box displays.
5. Choose the appropriate keyboard configuration for your system and click Next.

   Note: For most U.S. systems, the default U.S. English can be used.

   If a previous version of Red Hat Linux is detected, a screen displays where you can choose to upgrade or perform a new installation.
   If no previous version of Red Hat Linux is detected, skip to step 7.

6. Select Perform a new Red Hat Linux installation to perform a full installation of the server, and then click Next.

   The Disk Partitioning Setup dialog box displays.

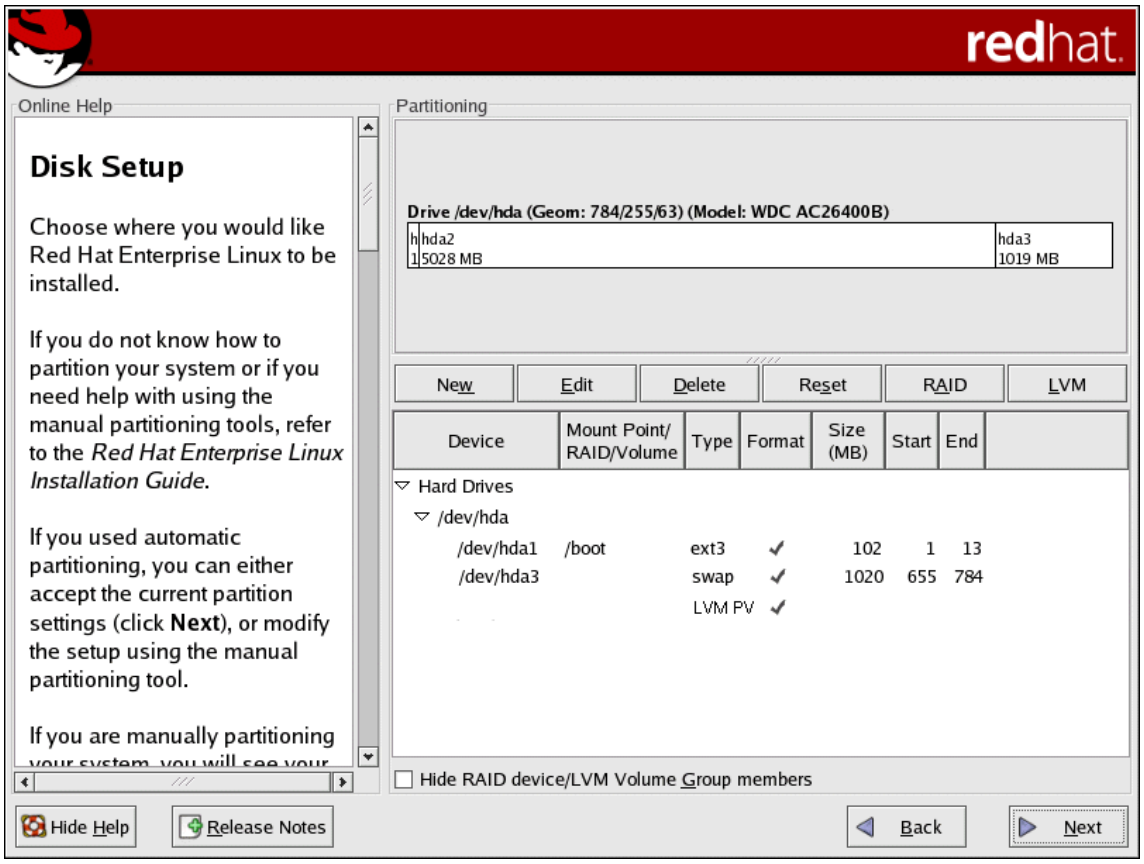
7. Choose Manually partition with Disk Druid, and then click Next.

   The Disk Setup dialog box displays as shown in Figure 2 below.

   Note: If you are reinstalling an existing system:

   - Remove LVM volume groups by selecting rootvg, and then clicking Delete.
   - Highlight any existing hard disk partitions, for example /dev/sda, and then click Delete.

Figure 2: Disk Setup



8. It is necessary to configure logical volumes on the hard drive that you are using for the Linux installation. Select the hard drive displayed in the list, and then click New.

   The Add Partition dialog box displays.

9. Complete the form as follows:
   - Mount Point: /boot
   - File System Type: ext3
   - Allowable Drives: The hard disk on which you are installing the Linux Operating System (OS).
   - Size (MB): 100
   - Additional Size Options: Fixed size
10. Click OK. You are returned to the Disk Setup screen.
11. Click New again.
12. Complete the form as follows:
   - Mount Point: Leave blank
   - File System Type: swap
   - Allowable Drives: The hard disk on which you are installing the Linux OS.
   - Size (MB): The amount of swap space should be twice the amount of RAM in your system. For example, if you have 512 MB of RAM, you should allocate 1024 MB of swap space.
   - Additional Size Options: Fixed size
13. Click OK. You are returned to the Disk Setup screen.
14. Click New again.
15. Complete the form as follows:
   - Mount Point: Leave blank.
   - File System Type: Physical Volume
   - Allowable Drives: The hard disk on which you are installing the Linux OS.
   - Size (MB): Leave blank.

     Note: If a value of 1 displays, this is acceptable. Ignore it and proceed.
   - Additional Size Options: Fill to maximum allowable size
16. Click OK. You are returned to the Disk Setup screen.
17. Highlight the physical volume created in step 15.

18. Click LVM to create a physical volume group.

    Note: LVM is a method of allocating hard drive space into logical volumes that can be easily resized instead of partitions. With LVM, the hard drive or set of hard drives is allocated to one or more physical volumes. Since a physical volume can not span over more than one drive, to span over more than one drive, create one or more physical volumes per drive. The logical volume group is divided into logical volumes, which are assigned mount points such as /home and / and file system types such as ext3. When “partitions” reach their full capacity, free space from the logical volume group can be added to the logical volume to increase the size of the partition. When a new hard drive is added to the system, it can be added to the logical volume group, and the logical volumes that are the partitions can be expanded.

    The Make LVM Volume Group dialog box is displayed.

19. Complete the form as follows:
    - Volume Group Name: rootvg (must be spelled exactly as shown in lower case)
    - Physical Extent: 4MB
    - Physical Volumes to Use: The name of the physical volume created in step 15.
20. Click Add. The Make Logical Volume dialog box displays.
21. Create logical volumes, using the values shown in Table 2 below. After entering each logical volume, click OK.
22. You will be returned to the Make LVM Volume Group dialog box.
23. Repeat step 21 through step 23 for each logical volume entry.

    Note: For ease of use, as well as avoiding typographical errors when defining your mount points, we suggest that you select the desired mount point names from the list provided. To choose from the list, click the down arrow to the right of the mount point definition field.

Table 2: Minimum file system sizes

Mount point	File system type	Logical volume name	18 GB drive	36 GB drive
/	ext3	LogVol00	1024	2048
/home	ext3	LogVol01	1024	2048
/tmp	ext3	LogVol02	1536	2048
/usr	ext3	LogVol03	6000	6000
/var	ext3	LogVol04	8000	23,856 (remaining space on disk)

24. When you are done defining your partitions, click OK to accept your Make LVM Volume Group settings.

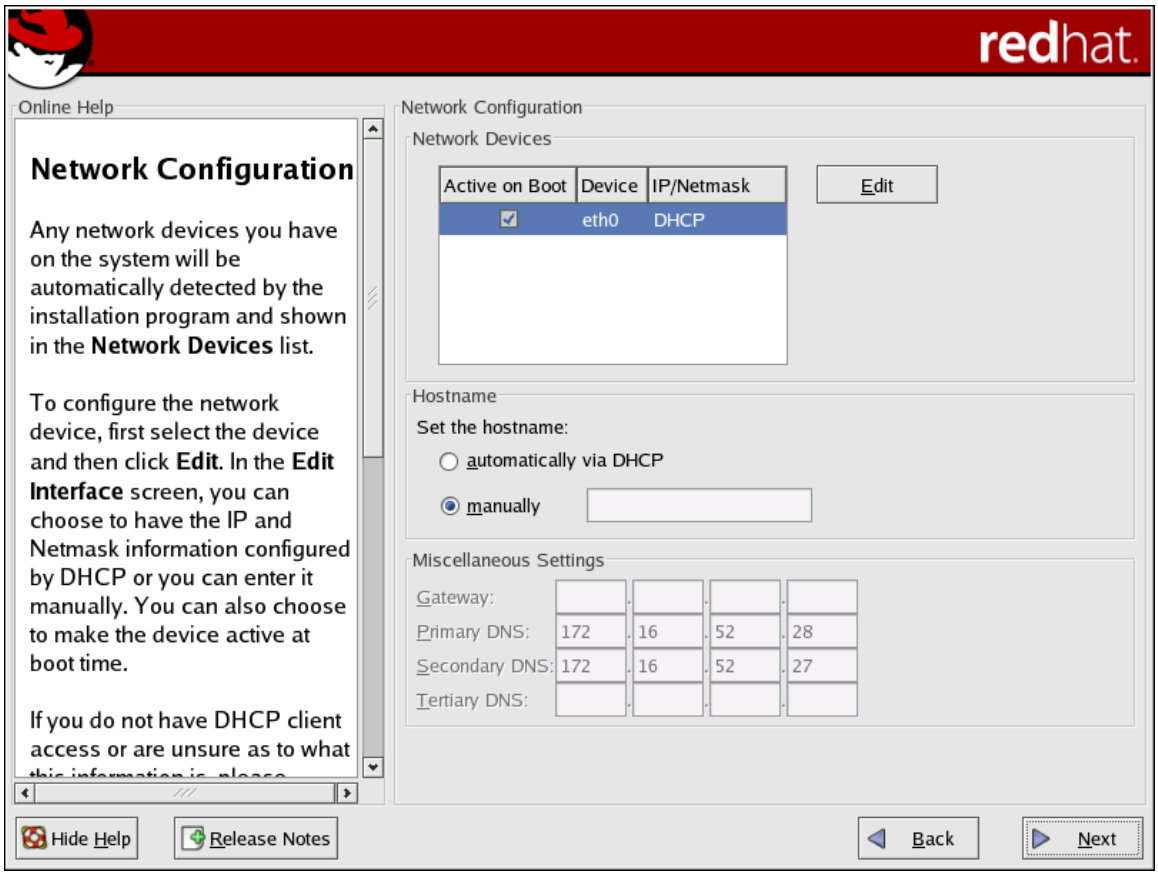
    You are returned to the Disk Setup screen.

25. Click Next to continue. The Boot Loader Configuration dialog box will be displayed.

26. Accept the default settings, and then click Next to continue.

    The Network Configuration dialog box is displayed.

Figure 3: Network Configuration

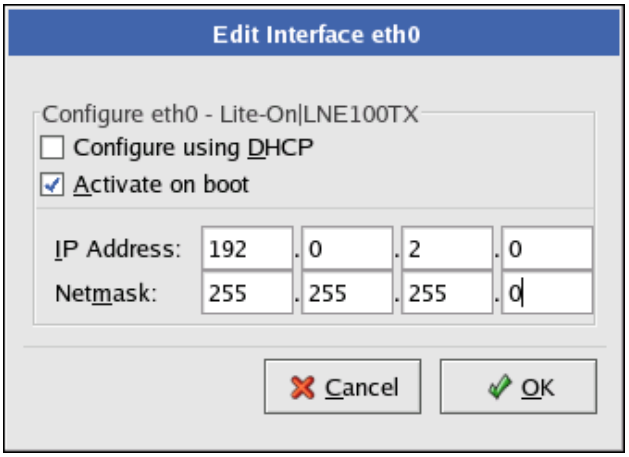


27. Click Edit to set parameters for the network interface.

    The Edit Interface dialog box displays.

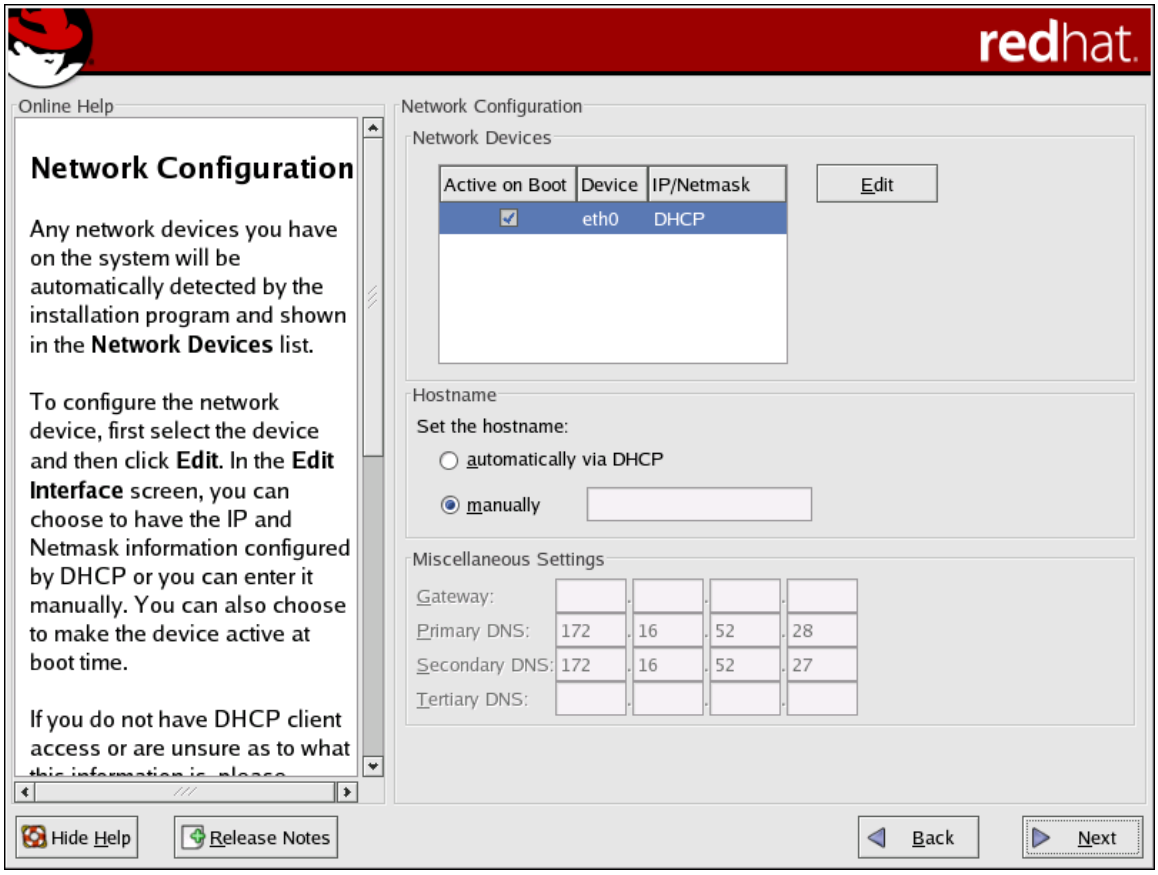
    Note: Make sure the Configure using DHCP checkbox is unchecked and the Activate on boot box is checked before proceeding.

Figure 4: Edit Interface


Edit Interface eth0
Configure eth0 - Lite-On|LNE100TX
Configure using DHCP
Activate on boot
IP Address: 192 . 0 . 2 . 0
Netmask: 255 . 255 . 255 . 0
Cancel
OK

28. The Picture Perfect host must have a static IP address. It does not work with DHCP.
    - Make sure to uncheck the option Configure using DHCP before proceeding.
    - Leave Activate on boot checked.
29. Provide the necessary information to configure your IP Address and Hostname for this Picture Perfect server. If you do not know what this should be, then please consult your Network Administrator.
30. Click OK. You are returned to the Network Configuration screen.

Figure 5: Network Configuration


redhat
Online Help
Network Configuration
Any network devices you have on the system will be automatically detected by the installation program and shown in the Network Devices list.
To configure the network device, first select the device and then click Edit. In the Edit Interface screen, you can choose to have the IP and Netmask information configured by DHCP or you can enter it manually. You can also choose to make the device active at boot time.
If you do not have DHCP client access or are unsure as to what
Network Configuration
Network Devices
Active on Boot
Device
IP/Netmask
Edit
eth0
DHCP
Hostname
Set the hostname:
automatically via DHCP
manually
Miscellaneous Settings
Gateway:
Primary DNS:
172 . 16 . 52 . 28
Secondary DNS:
172 . 16 . 52 . 27
Tertiary DNS:
Hide Help
Release Notes
Back
Next

31. Under Hostname, Set the hostname:, select manually. Type the host name.

Caution: Do not leave this field blank. It must be set to an alphanumeric value before Picture Perfect is installed!

Keep the following in mind:

- Use lowercase a through z, and/or 0 through 9. Do NOT use UPPERCASE.
- Use the simple machine name, such as pphost1, not the fully qualified name.
- The host name may not be more than 16 characters in length.
- Do not use host names containing the dash character (-).
  Informix does not recognize this as a valid character and will prevent the database from starting.
- Do not use host names containing the underscore character (_).
  This is not a valid character in the web server running on the Picture Perfect host.

32. Under Miscellaneous Settings, configure the Gateway and the Primary DNS, if applicable.

    Note: If you fail to provide a Primary DNS, an error message displays. Depending on your network environment, this could cause future problems. If you do not know what the Primary DNS should be, consult your Network Administrator.

33. When you are ready, click Next.

    The Firewall Configuration dialog box is displayed.

34. Select the No Firewall option button.

35. Select Disabled for SELinux.

36. Click Next.

    The Additional Language Support dialog box is displayed.

37. Click Proceed to close the warning.

    The Additional Language Support dialog box is displayed.

38. In the list box for the default language for this system, choose English (USA).

    If you plan on installing CARMA in any other supported languages, either now or in the future, you should install the languages on your system now. Otherwise, the operating system will have to be re-installed.

39. Click Next. The Time Zone dialog box is displayed.

40. Select the appropriate time zone.

41. If your time zone incorporates Daylight Savings Time, select the check box titled System clock uses UTC.

    Note: If it is necessary to adjust the date/time, execute the dateconfig command after the Linux installation is complete.

42. Click Next. The Set Root Password dialog box is displayed.

43. Specify a password for root, and confirm it by typing it a second time. The recommended length for the root password is greater than 12 characters, at least two of which must be alpha and one special or numeric. For example, `2b||~2bistheQ` is a good choice for a password.

44. Click Next to continue. The Package Installation Defaults dialog box is displayed.

45. If not already selected, select the check box next to Customize the set of packages to be installed.

46. Click Next to continue. The Package Group Selection dialog box is displayed.

47. Select the following packages:
    - Desktops: X Window System, GNOME Desktop Environment
    - Applications: Editors
    - Servers: Legacy Network Server (Click Details, select Telnet-Server.)
    - Development: Development Tools, X Software Development, Legacy Software Development
    - System: Administration Tools, Printing Support
48. Click Next to accept the Package Group Selections.

    The About to Install dialog box displays including a list of the media required for installation of the selected packages.

    Note: If, for some reason, you would rather not continue with the installation process, this is your last opportunity to safely cancel the process and reboot your machine. Once you press the Next button, partitions will be written and packages will be installed. If you wish to abort the installation, you should reboot now before any existing information on any hard drive is rewritten. To cancel this installation process, press your computer's Reset button or use the [Control]-[Alt]-[Delete] key combination to restart your machine.
49. Click Continue to proceed.

    The installation wizard proceeds to install your system. This may take a while.

    You should now see a screen preparing you for the installation of Red Hat Linux. For your reference, a complete log of your installation can be found in `/root/install.log` once you reboot your system.

    When you are done, the Congratulations dialog box displays.
50. Click Reboot and allow the system to reboot.

    Note: If, during the reboot process, you are prompted to change system permissions, tab to the entry labeled DO IT and press Enter.

    When the reboot is complete, the Welcome dialog box displays.
51. Click Next to continue. The License Agreement dialog box displays.
52. Select Yes, I agree to the License Agreement. Click Next to continue.

    The Date and Time dialog box displays.
53. Select the current date and time.

    Optional: If you want the host to synchronize its clock with a remote time server, check the Network Time Protocol tab.

54. Check the Enable Network Time Protocol checkbox and use the drop-down menu to select a time server. Click Next to continue.

    Note: If it is necessary to adjust the date/time, execute the dateconfig command after the Linux installation is complete.

    The Display dialog box displays.

55. Red Hat Enterprise Linux auto-detects your monitor and loads the correct driver. If you would like to choose another driver, click Configure... and browse the list of available drivers. Select the resolution of your screen and click Next to continue.

    Note: The recommended resolution is: 1024 × 768.

    The Red Hat Login dialog box displays.

56. To register with Red Hat and provide a Red Hat login:

    - If you have already registered with Red Hat Network, enter your account information in the appropriate field. Click Next to continue.
    - If you have never registered, choose Tell me why I need to register and provide a Red Hat login. A dialog box displays, which allows you the option of registering at a later time.

    If you provided your Red Hat login account information, the Activate dialog box displays.

57. Enter the subscription number in the appropriate field. Otherwise, select I do not have a subscription number. Click Next to continue.

    The Additional CDs dialog box displays.

58. There are no required add-ons for CARMA 4.x. Click Next to continue.

    The Finish Setup dialog box displays.

59. The set up for Red Hat Linux is now complete and you may proceed to “Installing CARMA” on page 27. Click Next to continue.

    The Red Hat Login screen displays.

Installing Red Hat Linux 5.3

Note: These instructions assume you are using an official copy of Red Hat Linux Enterprise 5.3 that was obtained from Red Hat, Inc.

To install Red Hat Enterprise Linux 5.3, follow these steps:

1. Insert the Red Hat Enterprise Linux 5.3 Operating System DVD, and then boot the computer. The boot prompt displays.
2. At the boot prompt, click Enter to proceed and wait for the process to load the basic operating system drivers.
3. The CD Found dialog box opens, press tab or use the right arrow key to select SKIP. Press enter or the spacebar to start the installation.
4. The Red Hat Welcome page opens. Click Next.
5. The Language Selection page opens. Choose the appropriate language, and then click Next.
6. The Keyboard Configuration page opens. Choose the appropriate keyboard configuration, and then click Next.
7. The Installation Number dialog box opens. Click Skip entering Installation Number, and then click OK.
8. The Skip dialog box opens, click Skip.
9. The installation type page opens. Click Install Red Hat Enterprise Linux Server, and then click Next.
10. The hard drive partition page opens. Select all disk drives available in your system, and then click Review and modify partitioning layout. Click Next.
11. A warning dialog box opens asking you to confirm your selections. Click Yes.
12. The Disk Setup page opens. If you are reinstalling an existing system, the existing LVM volume groups must be deleted. To do this, select a LVM volume group from the list on the Disk Setup page, and then click Delete.

    The Confirm Delete dialog box opens. Click Delete. The LVM volume group is removed from the list.

    Repeat the above procedure for all remaining LVM volume groups.
13. On the Disk Setup page, delete each partition on a specific drive until all disk space is shown as free space. To do this, select a partition displayed in the list, and then click Delete.

    The Confirm Delete dialog box opens. Click Delete. The partition is removed from the list.

14. Click New. The Add Partition dialog box opens.

Note: It will be necessary to create a boot partition and swap space partition. The remaining space from the physical volume(s) can be assigned to a volume group. The volume group is then partitioned into Logical Volumes using the LVM.

15. Create the boot partition as follows:

- Mount Point: /boot
- File System Type: ext3
- Allowable Drives: Select the hard disk on which you are installing the Linux operating system.
- Size (MB): 100
- Additional Size Options: Fixed size
- Click the Force to be a primary partition check box.

16. Click OK. You are returned to the Disk Setup page.

17. Click New again.

18. Create the swap partition as follows:

- Mount Point: Leave blank.
- File System Type: swap
- Allowable Drives: Select the hard disk on which you are installing the Linux operating system.
- Size (MB): Refer to Table 3 below.
- Additional Size Options: Fixed size
- Click the Force to be a primary partition check box

Table 3: Physical volume sizing (boot and swap)

Logical/physical drive	Partition	Recommended size	
sda or had	boot	100 MB	
		RAM	**Swap space**
	swap	Less than 1 GB	2 times the size of RAM
		1 GB to 2 GB	1.5 times the size of RAM
		2 GB to 8 GB	Equal to the size of RAM
		More than 8 GB	0.75 times the size of RAM

19. Click OK. You are returned to the Disk Setup page.

20. Click New again.

21. Create the rootvg volume group as follows:
    - Mount Point: Leave blank.
    - File System Type: physical volume (LVM)
    - Allowable Drives: The hard disk on which you are installing the Linux operating system.
    - Size (MB): Leave the default value.
    - Additional Size Options: Fill to maximum allowable size
22. Click OK. You are returned to the Disk Setup page.
23. Click LVM. The Make LVM Volume Group page opens. Create the rootvg volume group as follows:
    - Volume Group Name: Rename it to rootvg (must be spelled exactly as shown in lower case).
    - Physical Extent: 32 MB.
    - Physical Volumes to Use: Select the hard disk on which you are installing the Linux operating system.

    Note: LVM is a method of allocating hard drive space into logical volumes that can be easily resized instead of partitions. With LVM, the hard drive or set of hard drives is allocated to one or more physical volumes. Since a physical volume can not span over more than one drive, to span over more than one drive, create one or more physical volumes per drive. The logical volume group is divided into logical volumes, which are assigned mount points such as /home and / and file system types such as ext3. When “partitions” reach their full capacity, free space from the logical volume group can be added to the logical volume to increase the size of the partition. When a new hard drive is added to the system, it can be added to the logical volume group, and the logical volumes that are the partitions can be expanded.
24. Click Add to create necessary logical volumes.

25. The Make Logical Volume dialog box opens. Create Logical Volumes LogVol00 through LogVol04 using the values listed in Table 4 below.

Table 4: Logical volume sizing

Volume group	Logical volume	Enter mount point	Size to enter (MB) for a 73 GB drive
rootvg	LogVol00	/	5,000
	LogVol01	/home	2,400
	LogVol02	/tmp	2,400
	LogVol03	/usr	7,000
	LogVol04	/var	56,200 (remaining space on disk)

26. When you have finished defining your partitions, click OK on the Make LVM Volume Group page to accept your settings. You are returned to the Disk Setup page. Click Next to continue.
27. The GRUB Boot Loader Configuration page opens. Accept the default settings, and then click Next.
28. The Network Configuration page opens. Under Network Devices, click Edit to set parameters for the network interface. The Edit Interface dialog box opens.

    Configure the Edit Interface dialog as follows:

    Note: The CARMA host must have a static IP address. It does not work with DHCP.

    - Select Enable IPv4 support check box. Click Manual configuration, and then enter the IP address and Prefix (Netmask).
    - Deselect Enable IPv6 check box.

29. Click OK. You are returned to the Network Configuration page. Under Hostname, Set the hostname, click manually, and then enter the hostname. See Figure 6 *on page 24.*

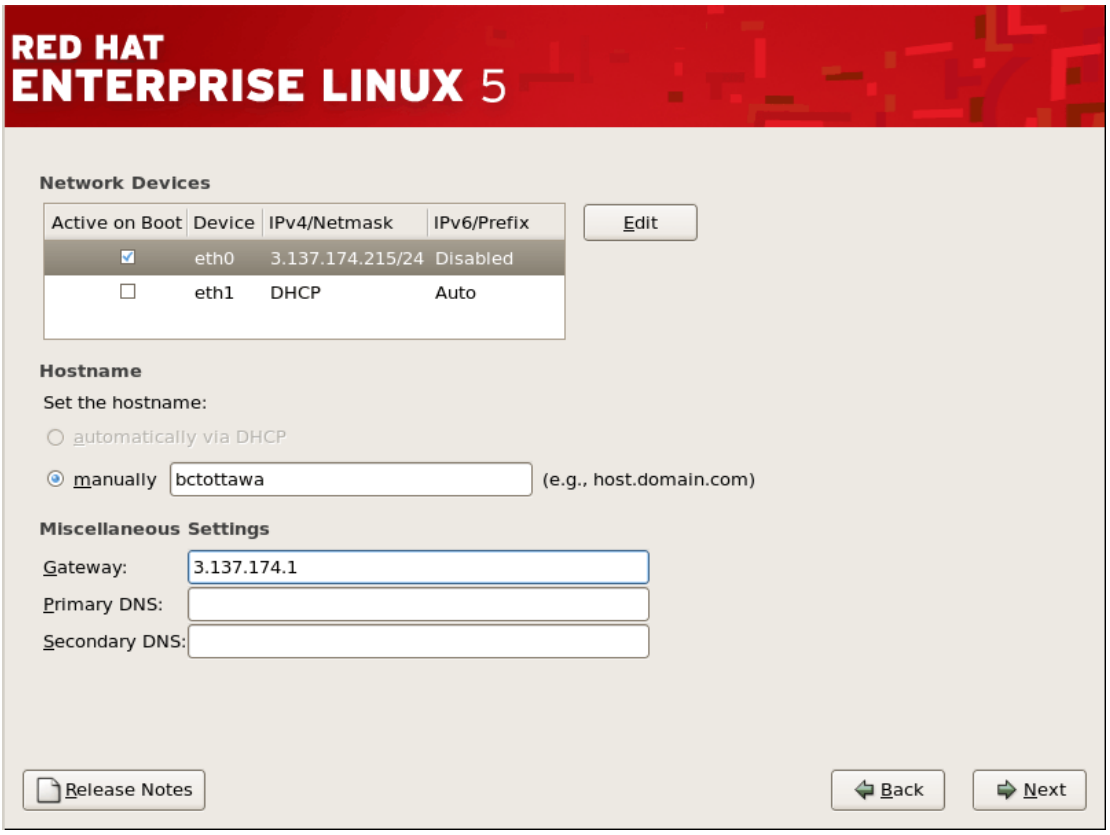
    Caution: Do not leave this field blank. It must be set to an alphanumeric value before CARMA is installed!

    Keep the following in mind:

    - Use lowercase a through z, and/or 0 through 9. Do NOT use UPPERCASE.
    - Use the simple machine name, such as carmahost, not the fully qualified name.
    - The host name may not be more than 16 characters in length.
    - Do not use host names containing the dash character (-).

- Do not use host names containing the underscore character (_). This is not a valid character in the web server running on the CARMA host.

Figure 6: Hostname



Under Miscellaneous Settings, configure the Gateway and Primary DNS, if applicable, and then click Next.

Note: If you fail to provide a Primary DNS, an error message dialog box opens. Depending on your network environment, this could cause future problems. If you do not know what this should be, consult your Network Administrator. Click Continue on the error message dialog box.

30. The Region Selection page opens. Select the region corresponding to the server location from the drop-down menu. Click the System clock uses UTC check box, and then click Next.

    Note: Selecting three-letter time zone designators ("EST", "PST", "CST", etc.) cause a problem with daylight savings time. Instead of using these designators, the full “America/New York", “America/San Francisco", etc should be used.

If it is necessary to adjust the date and/or time, use the **`dateconfig`** command when the Linux installation is complete.

31. The Set Root Password page opens. In the Root Password field, enter a password (minimum six characters) for **`root.`** In the Confirm field, enter the password again, and then click Next.
32. The Package Group Selection window opens. Click Customize now to open the Package Selection page.

    Select the following packages, and then click Next.

    Desktop Environments:

    - GNOME Desktop Environment

    Applications:

    - Editors

    Development:

    - Development Tools
    - Legacy Software Development
    - X Software Development

    Servers:

    - Legacy Network Server (click on Option packages and select all options)
    - Printing Support

    Base System:

    - Administration Tools
    - Base
    - Dialup Networking Support
    - X Windows System

    Languages:

    - Choose English (USA).

    Note: If you plan on installing CARMA in any other supported languages, either now or in the future, you should install the languages on your system now. Otherwise, the operating system will have to be re-installed.
33. After a check of dependencies in packages is performed, the About to Install Red Hat Enterprise Linux Server page opens. Click Next to begin the installation of Red Hat Enterprise Linux 5.3.

    Note: If, for some reason, you do not wish to continue with the installation process, this is your last opportunity to safely cancel the process and reboot your machine. Once you press the Next button, partitions will be written and

packages will be installed. If you wish to abort the installation, you should reboot now before any existing information on any hard drive is rewritten. To cancel this installation process, press your computer's Reset button or use the [Control]-[Alt]-[Delete] key combination to restart your machine.

34. After installation, the Congratulations, the installation is complete page opens. Remove any media used during the installation process, and then click Reboot.
35. When the reboot is complete, the Welcome page opens. Click Forward to continue.
36. The License Agreement page opens. Click Yes, I agree to the License Agreement, and then click Forward.
37. The Firewall page opens. Select Firewall: Disabled, and then click Forward. A confirmation dialog box opens. Click Yes to continue.
38. The SELinux Setting page opens. Select SELinux: Disabled, and then click Forward. A confirmation dialog box opens. Click Yes to continue.
39. The Kdump page opens. Accept the default settings, and then click Forward.
40. The Date and Time page opens. Set the current date and time, and then click Forward.

    Optional: If you want the host to synchronize its clock with a remote time server, click the Network Time Protocol tab.

    - Check the Enable Network Time Protocol check box and use the drop-down menu to select a time server.

41. The Set Up Software Updates page opens. Select No, I prefer to register at a later time, and then click Forward. A confirmation dialog box opens, click No thanks, I'll connect later. The Finish Updates page opens, Click Forward.

    Optional: To register with Red Hat and provide a Red Hat login:

    - If you have already registered with Red Hat Network, click Yes, I'd like to register now. Click Forward. The Choose Server page opens. Select your server, and then click Forward to continue.
        - If you provided your Red Hat login account information, the Activate dialog opens.
        - Enter the subscription number in the appropriate field. Otherwise, select I do not have a subscription number. Click Forward to continue.
    - If you have never registered, choose Why Should I Connect to RHN? The Why Register dialog box opens, providing registration information.

42. The Create User page opens. Click Forward to continue. A confirmation dialog box opens. Click continue.

43. The Sound Card page opens. Click Forward to continue.
44. The Additional CDs page opens, There are no required add-ons for CARMA. Click Finish to continue.
45. The Finish Setup dialog box opens. Click OK to reboot the server.
46. The set up for Red Hat Enterprise Linux 5.3 is now complete and you may proceed “Installing CARMA” below.

Installing CARMA

Configuring the network

Before installing the CARMA software, you need to configure a static IP address.

To configure the network:

1. Log on as `root`.

   Note: The default password is “carma1”. We strongly recommend that you change the password, using the passwd command.

   The Linux desktop displays.

2. From the Red Hat Main Menu, select:

   Red Hat 4.7: System Settings > Network

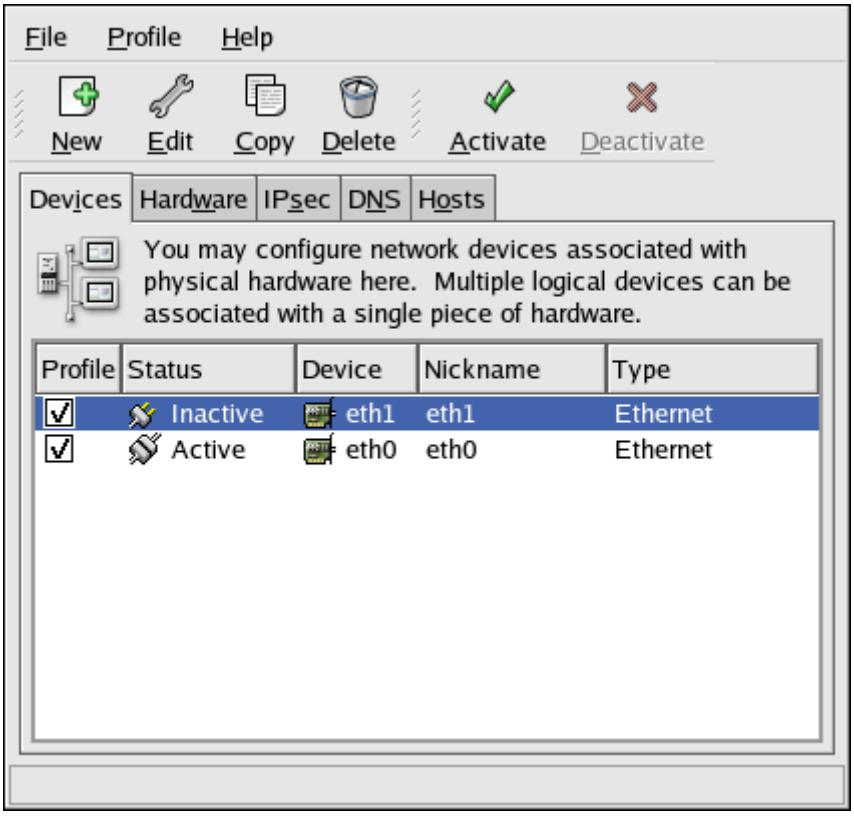
   Red Hat 5.3: System > Administration > Network

   — or —
   From a terminal window, type:

   `/usr/sbin/system-config-network`

   The Network Configuration window displays.

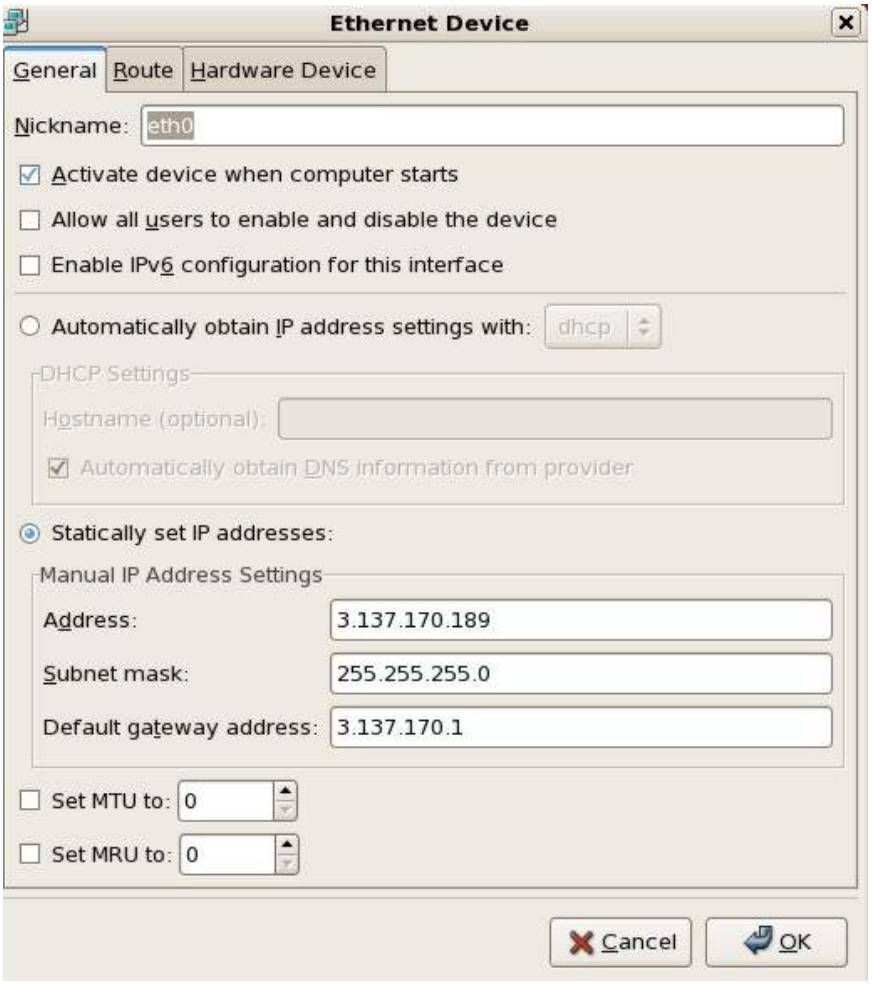
Figure 7: Network Configuration Window



3. If you have only one network card, only one option is listed. Double-click that option. If you have multiple network cards (wireless and wired), choose the wired device to configure first. Under Type, the display will show Ethernet.

   The Ethernet Device window displays.

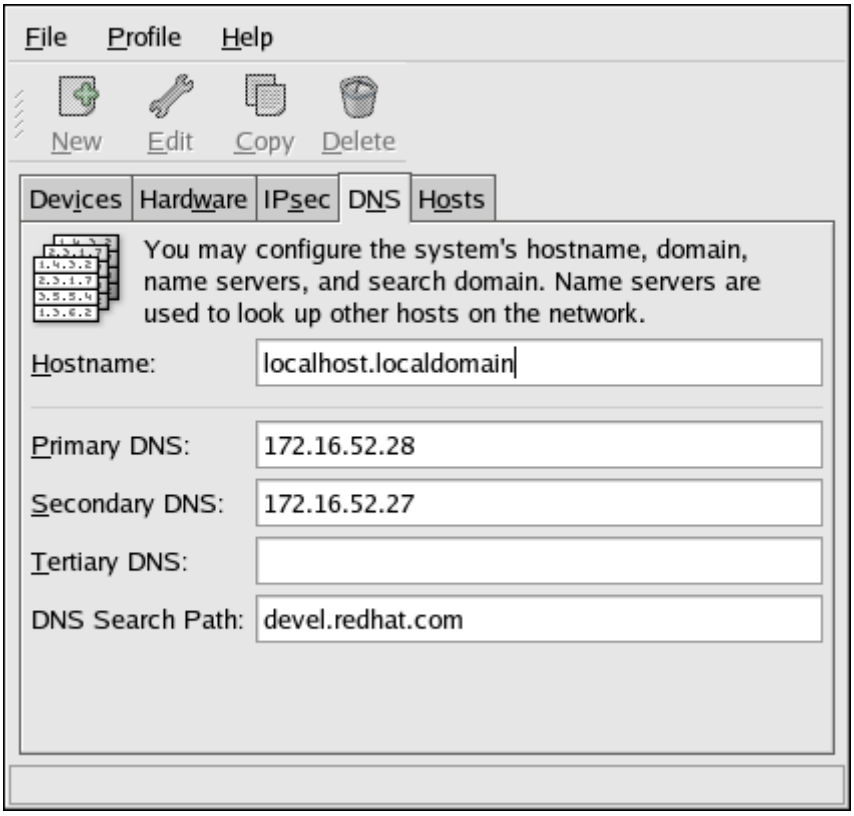
Figure 8: Ethernet Device Settings



4. Click Statically set IP addresses and complete the configuration fields with the required information.
5. Click OK.

   You are returned to the Network Configuration window.

Figure 9: DNS Tab



6. Click the DNS tab.
7. Enter your hostname, DNS (Domain Name Servers), and DNS search path information. Be very careful when entering this information as an incorrect hostname can render your GNOME desktop unusable.
8. Click File > Save.

Including a valid domain name

Modify the `/etc/hosts` file to include a valid domain name for Sendmail. If one is not available, you may insert the name `local.com` as a placeholder.

For more information on how to modify the `/etc/hosts` file, see Appendix C "Using the VI editor" on page 139.

For example:
`192.9.200.11 carma local.com`

To include a valid domain name for SendMail:

1. Log on as root.
2. From the Red Hat Main Menu, select:

   Red Hat 4.0: System Settings > Network

   Red Hat 5.3: System > Administration > Network

   — or —
   From a terminal window, type:

   `/usr/sbin/system-config-network`

   The Network Configuration window opens.
3. Select the Hosts tab from Network Configuration dialog box and add the appropriate entries.

   For more information on how to modify the `/etc/hosts` file, see Appendix C “Using the VI editor” on page 139.
4. In the VI editor, type /root/.rhosts
5. Specify the name of the server that is hosting Picture Perfect.

   For example:
   3.112.71.47 pictureperfecthost

Installing the CARMA software on Red Hat Linux 4, Update 7

To install the CARMA software on Red Hat Linux 4, Update 7:

1. Log on as `root`.
2. Right click on the desktop, and then click Open Terminal.

   A terminal window displays.
3. Insert the CARMA v4.5 Installation DVD into your server. Wait for the DVD ROM LED to stop blinking before proceeding. The DVD auto mounts.
4. Start the installation by typing the following:

   ```
   cd /root  [Enter]
   cd /media/install.sh [Enter]
   ```

   The installation program determines what packages are needed, installs them, and then installs the CARMA application.
5. Press Enter when instructed.

   Messages, similar to the following display:

```
                    Installation Script for CARMA

   This installation assumes as basic installation of Red
   Hat Enterprise Linux using the standard RPM packages from
   the RedHat Linux CD, and assumes you know how to
   configure and administrate Linux, Apache and Mysql. If
   you have installed a custom version, or have installed a
   custom Apache, PHP, or Mysql distribution, this
   installation may not work. See your UTC Fire & Security
   representative for more information.

   You have 79G free for the /var filesystem.  This is where
   the CARMA database files will be stored.  The absolute
   minimum required space free here should be around 200M
   for a small Picture Perfect installation with few
   transactions.  For larger Picture Perfect systems, be
   sure you have at least 4 Gigabytes of free space in this
   filesystem.

   Press the Enter key to see License Agreement...
```

6. Press Enter to continue.

   Messages, similar to the following display:

```
   END-USER SOFTWARE LICENSE AGREEMENT FOR

   UTC Fire & Security. "Application Software Product"

   IMPORTANT-READ CAREFULLY:

   This UTC Fire & Security, End-User License Agreement
   ("EULA") is a legal agreement between you (either an
   individual or a single entity) and UTC Fire & Security,
   for the referent UTC Fire & Security application software
   product, which includes computer software and may include
   associated media, printed materials, and "online" or
   electronic documentation ("SOFTWARE PRODUCT"). By
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   PRODUCT, you agree to be bound by the terms of this EULA.
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   international copyright treaties, as well as other
```

```
intellectual property laws and treaties. The SOFTWARE
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You may install and use one copy of the SOFTWARE PRODUCT,
or any prior version for the same operating system, on a
single computer.

Enter '1' to continue viewing the license agreement, or,
Enter '2' to accept the agreement, '3' to decline it.
```

7. Enter 2, and then press Enter to continue.

   Messages, similar to the following display:

```
Installation starting for Red Hat Enterprise Linux ES
release 4 (Update 7).

 (NOTE : CARMA requires certain packages to be installed
from Linux Media)

1) Install required packages from Red Hat Enterprise
Linux ES release 4 (Update 7) media

2) Prerequisites already installed, start CARMA
installation

3) Cancel installation

Please Select one choice (1, 2, 3):
```

8. Enter 1, and then press Enter to continue.

```
Open another terminal and unmount CARMA media.

Insert Red Hat Enterprise Linux ES release 4 (Update 7)
media and mount it.

Select y after inserting the media. Select n for cancel
(y/n)?
```

9. Open another terminal window, and then unmount the CARMA media by typing the following command:

   `umount /media/cdrom` [Enter]

10. Remove the CARMA media, and then insert the Red Hat Linux ES release 4 (Update 7) media. The media auto mounts.

11. Go back to the original terminal window to continue. After inserting the Red Hat Linux ES release 4 (Update 7) media, select y to continue, and then press Enter.
12. Enter the Red Hat Linux ES release 4 (Update 7) media path by typing the following command:

    `/media/cdrom` [Enter]

    Messages, similar to the following display:

    ```
    Copying required packages
    Verifying or Installing Required Packages...
    curl installed. Running version is curl-7.12.1-11.el4
    apr installed. Running version is apr-0.9.4-24.9
    apr-util installed. Running version is apr-util-0.9.4-22.el4
    httpd installed. Running version is httpd-2.0.52-41.ent
    php installed. Running version is php-4.3.9-3.22.9
    libc-client-2002e-14 installed. Running version is libc-client-2002e-14
    php-imap installed. Running version is php-imap-4.3.9-3.22.9
    php-ldap installed. Running version is php-ldap-4.3.9-3.22.9
    perl-DBI installed. Running version is perl-DBI-1.40-9
    mysql installed. Running version is mysql-4.1.22-2.el4
    mysql-devel installed. Running version is mysql-devel-4.1.22-2.el4
    mysqlclient10 installed. Running version is mysqlclient10-3.23.58-4.RHEL4.1
    mysqlclient10-devel installed. Running version is mysqlclient10-devel-3.23.58-4.RHEL4.1
    mysql-bench installed. Running version is mysql-bench-4.1.22-2.el4
    mysql-server installed. Running version is mysql-server-4.1.22-2.el4
    ```

```
php-mysql installed. Running version is php-mysql-4.3.9-
3.22.9

gd installed. Running version is gd-2.0.28-5.4E.el4_6.1

php-gd installed. Running version is php-gd-4.3.9-3.22.9

Press Ctrl-c to exit, or Press the Enter key to
continue...

Installing Informix Client SDK

Please follow the instructions from the manual

(Extracting files, this may take some time.)

Is ClientSDK being installed along with Informix database
server version 9.x (required to be run as user
"informix")?  (yes or no)  no
```

13. Enter no, and then press Enter to continue.

    Messages, similar to the following display:

```
Installation Script

Installation Script Requirements:

- A user “informix” and a group “informix” must be known
to the system.

- The product source files must have been loaded by user
root

- This installation procedure must be run by user root.

- You must also set INFORMIXDIR to where you would like

to install the product on and make INFORMIXDIR as your

current working directory.

This script will change the owner, group, and mode of

many of the files of this package in this directory.

IBM/Informix-Client SDK Version 2.81.UC3 Copyright (C)

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WARNING!

This software, and its authorized use and number of

users, are subject to the applicable license agreement

with IBM. If the number of users exceeds the licensed
```

```
number, the excess users may be prevented from using the
software. UNAUTHORIZED USE OR COPYING MAY SUBJECT YOU AND
YOUR COMPANY TO SEVERE CIVIL AND CRIMINAL LIABILITIES.
Extracting the message files to /tmp/install
771 blocks
Installing Messages...\n
Installing directory /opt/informix//etc
Installing directory /opt/informix//msg
Installing directory /opt/informix//msg/en_us
Installing directory /opt/informix//msg/en_us/0333
...done installing messages
Extracting the GLS files to /tmp/install
7137 blocks
Installing directory /opt/informix//gls/lc11/en_au
Installing directory /opt/informix//gls/lc11/en_gb
Installing directory /opt/informix//gls/lc11/en_us
Installing directory /opt/informix//gls/lc11/es_es
Installing directory /opt/informix//gls/lc11/fi_fi
Installing directory /opt/informix//gls/lc11/fr_be
Installing directory /opt/informix//gls/lc11/fr_ca
Installing directory /opt/informix//gls/lc11/fr_ch
Installing directory /opt/informix//gls/lc11/fr_fr
Installing directory /opt/informix//gls/lc11/is_is
Installing directory /opt/informix//gls/lc11/it_it
Installing directory /opt/informix//gls/lc11/ja_jp
Installing directory /opt/informix//gls/lc11/ko_kr
Installing directory /opt/informix//gls/lc11/nl_be
Installing directory /opt/informix//gls/lc11/nl_nl
Installing directory /opt/informix//gls/lc11/no_no
Installing directory /opt/informix//gls/lc11/os
Installing directory /opt/informix//gls/lc11/pl_pl
```

```
Installing directory /opt/informix//gls/lc11/pt_br
Installing directory /opt/informix//gls/lc11/pt_pt
Installing directory /opt/informix//gls/lc11/ru_ru
Installing directory /opt/informix//gls/lc11/sk_sk
Installing directory /opt/informix//gls/lc11/sv_se
Installing directory /opt/informix//gls/lc11/th_th
Installing directory /opt/informix//gls/lc11/zh_cn
Installing directory /opt/informix//gls/lc11/zh_tw
...done installing GLS files
Extracting files from clientsdkcontent file...
5514 blocks
Installing ClientSDK as user root...
Installing directory.
Installing directory bin
Installing directory lib
Installing directory lib/client
Installing directory lib/client/csm
Installing directory lib/esql
Installing directory lib/dmi
Installing directory lib/c++
Installing directory demo/cli
Installing directory doc
Installing directory doc/gls_api
Installing directory doc/gls_api/en_us
Installing directory doc/gls_api/en_us/0333
IBM Informix Product: IBM INFORMIX-Client SDK
Installation Directory: /opt/informix/
Performing root portion of installation of IBM
INFORMIXClient SDK...
Installation of IBM INFORMIX-Client SDK complete.
```

```
Stoping and starting httpd services:
Stopping httpd:                                [  OK  ]
Starting httpd:                                [  OK  ]


Installing CARMA rpm ...   Please wait
Please READ the installation documentation carefully
```

14. Enter `Picture Perfect Hostname (shortname, not fqdn): pphost.` Press Enter.

    Note: If you are installing CARMA to use with a Picture Perfect Enterprise Edition system, enter the host name of the Picture Perfect Network Host. CARMA retrieves data from the subhosts listed in the host table of the network host.

    For example, if the Picture Perfect host was called `pphost` and resided on the UTC Fire & Security network, you would enter:

    pphost `[Enter]`,

    — not —

    pphost.utcfireandsecurity.com `[Enter]`

15. Enter `IP of the Picture Perfect Host: 3.212.217.117.` Press Enter.

Picture Perfect 4.0:

16. Enter `a valid Picture Perfect database username [ppadmin]: Informix.` Press Enter.
17. Enter `the Picture Perfect database username's password [ppadmin]: <password>`. Press Enter.
18. Enter the Picture Perfect database port [1960]: 1960. Press Enter.

```
Picture Perfect Hostname: pphost
Picture Perfect IP: 3.212.217.117
Picture Perfect Database Username: informix
Picture Perfect Database Password: <password>
Picture Perfect Database Port: 1960
Are these correct (y/n)? [n]
```

19. The default selection is `n.` Enter `y`, and then press Enter to continue.

Picture Perfect 4.5:

20. `Enter a valid Picture Perfect database username [ppadmin]: ppadmin.` Press Enter.
21. `Enter the Picture Perfect database username's password [ppadmin]: ppadmin.` Press Enter..
22. `Enter the Picture Perfect database port [9088]: 9088.` Press Enter.

    ```
    Picture Perfect Hostname: pphost

    Picture Perfect IP: 3.212.217.117

    Picture Perfect Database Username: ppadmin

    Picture Perfect Database Password: <password>

    Picture Perfect Database Port: 9088

    Are these correct (y/n)? [n]
    ```

23. The default selection is `n.` Enter `y`, and then press Enter to continue.

    Messages, similar to the following display:

    ```
    Updating /etc/carma.conf with new data.

    Alias /carma /var/www/html/carma

    Adding startup flags for httpd and mysql

     re-starting MySQL services:

    Shutting down MySQL.....                   [  OK  ]

    Starting MySQL......                       [  OK  ]

                   INSTALLATION COMPLETE!

    NOTES:

    You will need to run a manual database import before
    using CARMA,which can be done from the CARMA
    administration page, or by typing
    "/etc/cron.daily/carma.cron" in Linux (as root).

    The import may take some time, depending on the size of
    thePicture Perfect installation and number of Picture
    Perfect hosts.

    Finally, edit the Configure System fields under System
    Administration for your specific configuration. This
    should be done for CARMA to understand certain Picture
    Perfect database fields to run properly.
    ```

```
Point your browser to
"http://localhost.localdomain/carma" and login with
"admin" and "admin" to setup users and configure.
```

Installing the CARMA software on Red Hat Linux 5.3

To install the CARMA software on Red Hat Linux 5.3:

1. Log on as `root`.
2. Right click on the desktop, and then click Open Terminal.

   A terminal window displays.
3. Insert the CARMA v4.5 Installation DVD into your server. Wait for the DVD ROM LED to stop blinking before proceeding. The DVD auto mounts.
4. Unmount the DVD by typing the following:

   ```
   umount /media/CDROM [Enter]
   ```
5. Mount the DVD by typing the following:

   ```
   mount /dev/dvd /media [Enter]
   ```
6. Start the installation by typing the following:

   ```
   cd /root  [Enter]
   cd /media/install.sh [Enter]
   ```

   The installation program determines what packages are needed, installs them, and then installs the CARMA application.
7. Press Enter when instructed.

   Messages, similar to the following display:

   ```
              Installation Script for CARMA

   This installation assumes as basic installation of Red
   Hat Enterprise Linux using the standard RPM packages from
   the RedHat Linux CD, and assumes you know how to
   configure and administrate Linux, Apache and Mysql. If
   you have installed a custom version, or have installed a
   custom Apache, PHP, or Mysql distribution, this
   installation may not work. See your UTC Fire & Security
   representative for more information.

   You have 78G free for the /var filesystem.  This is where
   the CARMA database files will be stored.  The absolute
   minimum required space free here should be around 200M
   for a small Picture Perfect installation with few
   ```

```
transactions.  For larger Picture Perfect systems, be
sure you have at least 4 Gigabytes of free space in this
filesystem.

Press the Enter key to see License Agreement
```

8. Press Enter to continue.

   Messages, similar to the following display:

```
END-USER SOFTWARE LICENSE AGREEMENT FOR

UTC Fire & Security. "Application Software Product"

IMPORTANT-READ CAREFULLY:

This UTC Fire & Security, End-User License Agreement
("EULA") is a legal agreement between you (either an
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product, which includes computer software and may include
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or any prior version for the same operating system, on a
single computer.

Enter '1' to continue viewing the license agreement, or,
Enter '2' to accept the agreement, '3' to decline it.
```

9. Enter 2, and then press Enter to continue.

   Messages, similar to the following display:

```
Installation starting for Red Hat Enterprise Linux Server
release 5.3.

(NOTE : CARMA requires certain packages to be installed
from Linux Media)

1) Install required packages from Red Hat Enterprise
Linux Server release 5.3 media

2) Prerequisites already installed, start CARMA
installation

3) Cancel installation

Please Select one choice (1, 2, 3):
```

10. Enter `1`, and then press Enter to continue.

    Messages, similar to the following display:

    ```
    Open another terminal and unmount CARMA media.

    Insert Red Hat Enterprise Linux Server release 5.3 media
    and mount it.

    Select y after inserting the media. Select n for cancel
    (y/n)? [y]
    ```

11. Open another terminal window, and then unmount the CARMA media by typing the following command:

    `umount /media/` [Enter]

12. Remove the CARMA media, and then insert the Red Hat Enterprise Linux Server release 5.3 media. The media auto mounts. Unmount, and then remount the media by typing the following commands:

    `umount /media/RHEL_5.3\ i386\DVD` [Enter]

    `mount /dev/dvd /media` [Enter]

13. Go back to the original terminal window to continue. After inserting the Red Hat Enterprise Linux Server release 5.3 media, select `y` to continue, and then press Enter.

14. Enter the Red Hat Enterprise Linux Server release 5.3 media path by typing the following command:

    `/media` [Enter]

    Messages, similar to the following display:

    ```
    Copying required packages

    Verifying or Installing Required Packages...
    ```

```
curl installed. Running version is curl-7.15.5-2.el5

postgresql-libs installed. Running version is postgresql-
libs-8.1.11-1.el5_1.1

apr installed. Running version is apr-1.2.7-11

apr-util installed. Running version is apr-util-1.2.7-
7.el5

httpd installed. Running version is httpd-2.2.3-23.el5

gmp installed. Running version is gmp-4.1.4-10.el5

php-common installed. Running version is php-common-
5.1.6-23.el5

php-cli installed. Running version is php-cli-5.1.6-
23.el5

php installed. Running version is php-5.1.6-23.el5

libc-client installed. Running version is libc-client-
2004g-2.2.1

php-imap installed. Running version is php-imap-5.1.6-
23.el5

php-ldap installed. Running version is php-ldap-5.1.6-
23.el5

perl-DBI installed. Running version is perl-DBI-1.52-
2.el5

MySQL-client-enterprise installed. Running version is
MySQL-client-enterprise-5.1.45-1.rhel5

MySQL-shared-compat-enterprise installed. Running version
is MySQL-shared-compat-enterprise-5.1.45-1.rhel5

perl-DBD-MySQL installed. Running version is perl-DBD-
MySQL-3.0007-2.el5

MySQL-devel-enterprise installed. Running version is
MySQL-devel-enterprise-5.1.45-1.rhel5

MySQL-server-enterprise installed. Running version is
MySQL-server-enterprise-5.1.45-1.rhel5

php-pdo installed. Running version is php-pdo-5.1.6-
23.el5

php-mysql installed. Running version is php-mysql-5.1.6-
23.el5
```

```
gd installed. Running version is gd-2.0.33-9.4.el5_1.1

php-gd installed. Running version is php-gd-5.1.6-23.el5

Press Ctrl-c to exit, or Press the Enter key to
continue...
```

15. Press Enter to continue.

    Messages, similar to the following display:

```
Installing Informix Client SDK

Please follow the instructions from the manual

(Extracting files, this may take some time.)

          Initializing InstallShield Wizard........

          Launching InstallShield Wizard........

Welcome to the InstallShield Wizard for IBM Informix
Client-SDK Version 3.50

The InstallShield Wizard will install IBM Informix
Client-SDK Version 3.50 on your computer.

To continue, choose Next.

IBM Informix Client-SDK Version 3.50

IBM Corporation

http://www.ibm.com

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1] 1
```

16. The default selection is `1`. Press Enter to continue.

    Messages, similar to the following display:

```
-------------------------------------------------------

     International License Agreement for Non-Warranted
Programs

     Part 1 - General Terms

     BY DOWNLOADING, INSTALLING, COPYING, ACCESSING, OR
USING THE PROGRAM YOU AGREE TO THE TERMS OF THIS
AGREEMENT. IF YOU ARE ACCEPTING THESE TERMS ON BEHALF OF
ANOTHER PERSON OR A COMPANY OR OTHER LEGAL ENTITY, YOU
REPRESENT AND WARRANT THAT YOU HAVE FULL AUTHORITY TO

      BIND THAT PERSON, COMPANY, OR LEGAL ENTITY TO THESE
TERMS. IF YOU DO NOT AGREE TO THESE TERMS,
```

```
- DO NOT DOWNLOAD, INSTALL, COPY, ACCESS, OR USE THE
PROGRAM; AND

- PROMPTLY RETURN THE PROGRAM AND PROOF OF ENTITLEMENT TO
THE PARTY

Press Enter to continue viewing the license agreement,
or, Enter "1" to accept the agreement, "2" to decline it
or "99" to go back to the previous screen, "3"  Print.
```

17. Enter 1 to accept the agreement, and then press Enter.

    Messages, similar to the following display:

    Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1] 1

18. The default selection is 1. Press Enter to continue.

    Messages, similar to the following display:

```
IBM Informix Client-SDK Version 3.50 Install Location

Please specify a directory or press Enter to accept the
default directory.

Directory Name: [/opt/informix/]   [ENTER]
```

19. Press Enter to accept the default.

    Messages, similar to the following display:

```
Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to
Redisplay [1] 1
```

20. The default selection is 1. Press Enter to continue.

    Messages, similar to the following display:

```
-------------------------------------------------------

Choose the setup type that best suits your needs.

[X] 1 - Typical

        The program will be installed with the suggested
configuration.

        Recommended for most users.

[ ] 2 - Custom

        The program will be installed with the features
you choose.

        Recommended for advanced users.
```

```
To select an item enter its number, or 0 when you are
finished: [0] 0  [ENTER]
```

21. The default selection is `0`. Press Enter to continue..

```
Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to
Redisplay [1] 1    [ENTER]
```

22. The default selection is `1`. Press Enter to continue..

    Messages, similar to the following display:

```
-------------------------------------------------------
IBM Informix Client-SDK Version 3.50 will be installed in
the following location:

/opt/informix/

with the following features:

Client

Messages

Global Language Support (GLS)

for a total size:

84.7 MB

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to
Redisplay [1] 1    [ENTER]
```

23. The default selection is `1`. Press Enter to continue..

    Messages, similar to the following display:

```
Installing IBM Informix Client-SDK Version 3.50. Please
wait...

|-----------|-----------|-----------|------------|

0%         25%         50%         75%        100%

||||||||||||||||||||||||||||||||||||||||||||||||||

Creating uninstaller...

Performing GSKit installation for Linux ...

Branding Files ...

Installing directory .

Installing directory etc

Installing directory bin
```

```
Installing directory lib
Installing directory lib/client
Installing directory lib/client/csm
Installing directory lib/esql
Installing directory lib/dmi
Installing directory lib/c++
Installing directory lib/cli
Installing directory release
Installing directory release/en_us
Installing directory release/en_us/0333
Installing directory incl
Installing directory incl/esql
Installing directory incl/dmi
Installing directory incl/c++
Installing directory incl/cli
Installing directory demo
Installing directory demo/esqlc
Installing directory demo/c++
Installing directory demo/cli
Installing directory doc
Installing directory doc/gls_api
Installing directory doc/gls_api/en_us
Installing directory doc/gls_api/en_us/0333
Installing directory tmp
Installing directory gsk
Installing directory gsk/client
Installing directory gskit
Installing directory gsk
Installing directory gsk/client
IBM Informix Product:       IBM INFORMIX-Client SDK
Installation Directory: /opt/informix
```

```
Performing root portion of installation of IBM INFORMIX-
Client SDK...
Installation of IBM INFORMIX-Client SDK complete.
Installing directory etc
Installing directory gls
Installing directory gls/cm3
Installing directory gls/cv9
Installing directory gls/dll
Installing directory gls/etc
Installing directory gls/lc11
Installing directory gls/lc11/cs_cz
Installing directory gls/lc11/da_dk
Installing directory gls/lc11/de_at
Installing directory gls/lc11/de_ch
Installing directory gls/lc11/de_de
Installing directory gls/lc11/en_au
Installing directory gls/lc11/en_gb
Installing directory gls/lc11/en_us
Installing directory gls/lc11/es_es
Installing directory gls/lc11/fi_fi
Installing directory gls/lc11/fr_be
Installing directory gls/lc11/fr_ca
Installing directory gls/lc11/fr_ch
Installing directory gls/lc11/fr_fr
Installing directory gls/lc11/is_is
Installing directory gls/lc11/it_it
Installing directory gls/lc11/ja_jp
Installing directory gls/lc11/ko_kr
Installing directory gls/lc11/nl_be
Installing directory gls/lc11/nl_nl
Installing directory gls/lc11/no_no
```

```
Installing directory gls/lc11/os
Installing directory gls/lc11/pl_pl
Installing directory gls/lc11/pt_br
Installing directory gls/lc11/pt_pt
Installing directory gls/lc11/ru_ru
Installing directory gls/lc11/sk_sk
Installing directory gls/lc11/sv_se
Installing directory gls/lc11/th_th
Installing directory gls/lc11/zh_cn
Installing directory gls/lc11/zh_tw
IBM Informix Product:       Gls
Installation Directory: /opt/informix
Performing root portion of installation of Gls...
Installation of Gls complete.
Installing directory etc
Installing directory msg
Installing directory msg/en_us
Installing directory msg/en_us/0333
IBM Informix Product:       messages
Installation Directory: /opt/informix
Performing root portion of installation of messages...
Installation of messages complete.
-------------------------------------------------------
The InstallShield Wizard has successfully installed IBM
Informix Client-SDK
Version 3.50. Choose Finish to exit the wizard.
Press 3 to Finish or 4 to Redisplay [3] 3
```

24. The default selection is `3`. Press Enter to continue.

    Messages, similar to the following display:

```
Stopping and starting httpd services:
Stopping httpd:                                [  OK  ]
```

```
Starting httpd:                                [  OK  ]
Installing CARMA rpm ...   Please wait
Please READ the installation documentation carefully
```

25. `Enter Picture Perfect Hostname (shortname, not fqdn): pphost.` Press Enter.

    Note: If you are installing CARMA to use with a Picture Perfect Enterprise Edition system, enter the host name of the Picture Perfect Network Host. CARMA retrieves data from the subhosts listed in the host table of the network host.

    For example, if the Picture Perfect host was called `pphost` and resided on the UTC Fire & Security network, you would enter:

    pphost `[Enter]`,

    — not —

    pphost.utcfireandsecurity.com `[Enter]`

26. `Enter IP of the Picture Perfect Host: 3.212.217.167.` Press Enter.

Picture Perfect 4.0:

27. `Enter a valid Picture Perfect database username [ppadmin]: Informix.` Press Enter.
28. `Enter the Picture Perfect database username's password [ppadmin]:` `<password>`. Press Enter.
29. `Enter the Picture Perfect database port [1960]: 1960.` Press Enter.

    ```
    Picture Perfect Hostname: pphost
    Picture Perfect IP: 3.212.217.167
    Picture Perfect Database Username: informix
    Picture Perfect Database Password: <password>
    Picture Perfect Database Port: 1960
    Are these correct (y/n)? [n]
    ```

30. The default selection is `n.` Enter y, and then press Enter to continue.

Picture Perfect 4.5:

31. `Enter a valid Picture Perfect database username [ppadmin]: ppadmin.` Press Enter.

32. `Enter the Picture Perfect database username's password [ppadmin]:` ppadmin. Press Enter..
33. `Enter the Picture Perfect database port [9088]: 9088.` Press Enter.

    ```
    Picture Perfect Hostname: pphost

    Picture Perfect IP: 3.212.217.167

    Picture Perfect Database Username: ppadmin

    Picture Perfect Database Password: <password>

    Picture Perfect Database Port: 9088

    Are these correct (y/n)? [n]
    ```

34. The default selection is `n.` Enter `y`, and then press Enter to continue.

    Messages, similar to the following display:

    ```
    Updating /etc/carma.conf with new data.

    Alias /carma /var/www/html/carma

    Adding startup flags for httpd and mysql

     re-starting MySQL services:

    Shutting down MySQL.....                   [  OK  ]

    Starting MySQL......                       [  OK  ]

                   INSTALLATION COMPLETE!

    NOTES:

    You will need to run a manual database import before
    using CARMA, which can be done from the CARMA
    administration page, or by typing
    "/etc/cron.daily/carma.cron" in Linux (as root).

    The import may take some time, depending on the size of
    thePicture Perfect installation and number of Picture
    Perfect hosts.

    Finally, edit the Configure System fields under System
    Administration for your specific configuration. This
    should be done for CARMA to understand certain Picture
    Perfect database fields to run properly.

    Point your browser to
    "http://localhost.localdomain/carma" and login with
    "admin" and "admin" to setup users and configure.
    ```

Enabling remote access

You will need to add the IP name and address of your CARMA host to your client workstation's hosts file, which are located in the following directories:

On Windows XP and Vista:

`C:\windows\hosts`

On Windows NT or Windows 2000:

`C:\winnt\system32\drivers\etc\hosts`

You need to edit the `.conf` file to include the IP address for the mail server and set the domain name.

Configuring your system for Sendmail:

1. Log on to the CARMA server as `root`.
2. Using the VI editor, edit the file as follows:

```
nameserver   <ipaddress>
domain  <domainname>
search  <carmahostname>
```

For information on how to modify the `/etc/resolv.conf` file, see Appendix C "Using the VI editor" on page 139.

Importing the Picture Perfect database

The database import utility runs automatically once a day. However, upon installation, you may want to manually run the import so that you can immediately begin using your CARMA server to generate reports.

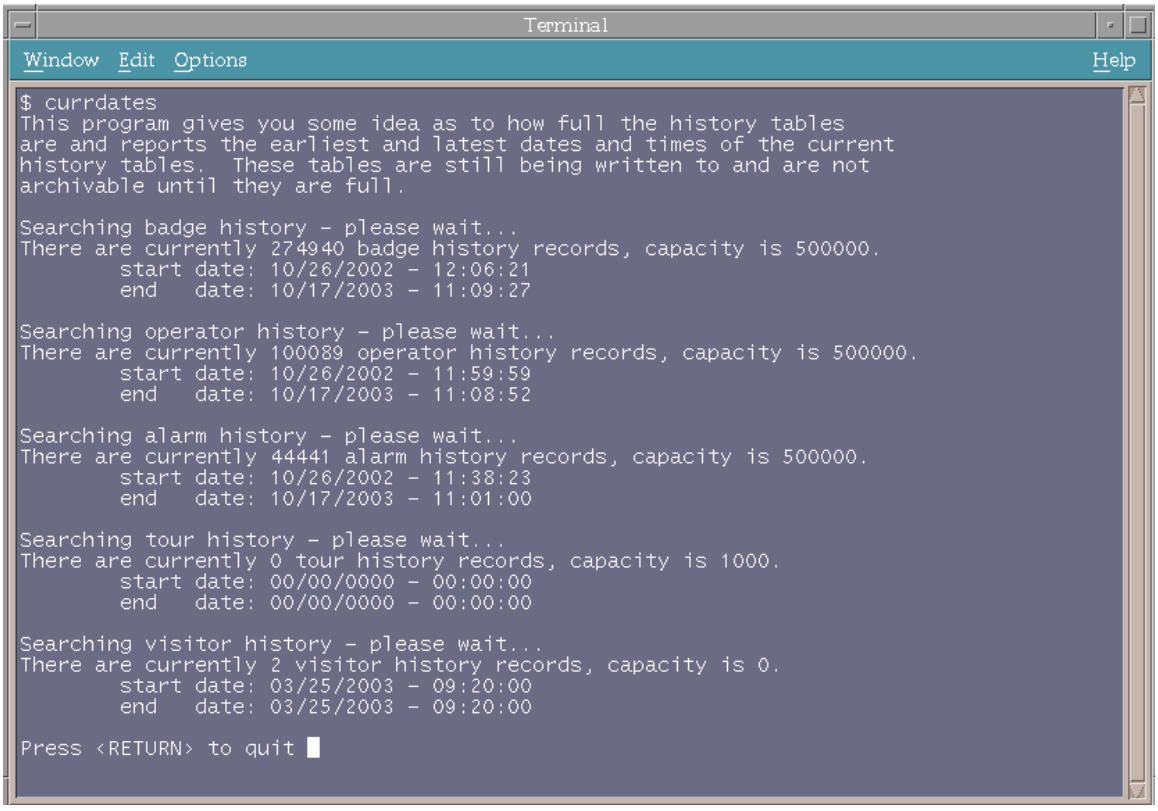
To import the Picture Perfect database:

1. Determine the size for your CARMA database, keeping in mind the current Picture Perfect database size as well as future requirements. To determine the current size of your Picture Perfect database, open a new terminal window on the Picture Perfect host and type:

   `currdates [Enter]`

   A screen similar to the following will display the various history tables along with the start and end dates.

Figure 10: Example: currdates


Terminal
Window Edit Options Help
$ currdates
This program gives you some idea as to how full the history tables
are and reports the earliest and latest dates and times of the current
history tables. These tables are still being written to and are not
archivable until they are full.
Searching badge history - please wait...
There are currently 274940 badge history records, capacity is 500000.
start date: 10/26/2002 - 12:06:21
end date: 10/17/2003 - 11:09:27
Searching operator history - please wait...
There are currently 100089 operator history records, capacity is 500000.
start date: 10/26/2002 - 11:59:59
end date: 10/17/2003 - 11:08:52
Searching alarm history - please wait...
There are currently 44441 alarm history records, capacity is 500000.
start date: 10/26/2002 - 11:38:23
end date: 10/17/2003 - 11:01:00
Searching tour history - please wait...
There are currently 0 tour history records, capacity is 1000.
start date: 00/00/0000 - 00:00:00
end date: 00/00/0000 - 00:00:00
Searching visitor history - please wait...
There are currently 2 visitor history records, capacity is 0.
start date: 03/25/2003 - 09:20:00
end date: 03/25/2003 - 09:20:00
Press <RETURN> to quit

2. The amount of data to keep is set by default in the `carma.conf` file at 4 months. Use the VI editor to edit the `carma.conf` file to reflect the amount

of data you wish to store, as determined in step 1. For information on editing this file, see Appendix C “Using the VI editor” on page 139” on page 139.

3. To manually run the import, log on to the CARMA server as `root` and type the following command:

   ```
   /etc/cron.daily/carma.cron [Enter]
   ```

   Depending on the size of your Picture Perfect database, the amount of time it takes to complete the import will vary. Do NOT interrupt the import mid-way and do NOT run multiple instances of the import program simultaneously. To avoid running multiple instances of Import by mistake, change the value of the parameter EXECUTE_IMPORT_CRON to 1.

   If you receive the following message, it means you have a Picture Perfect Host, which is not a redundant system:

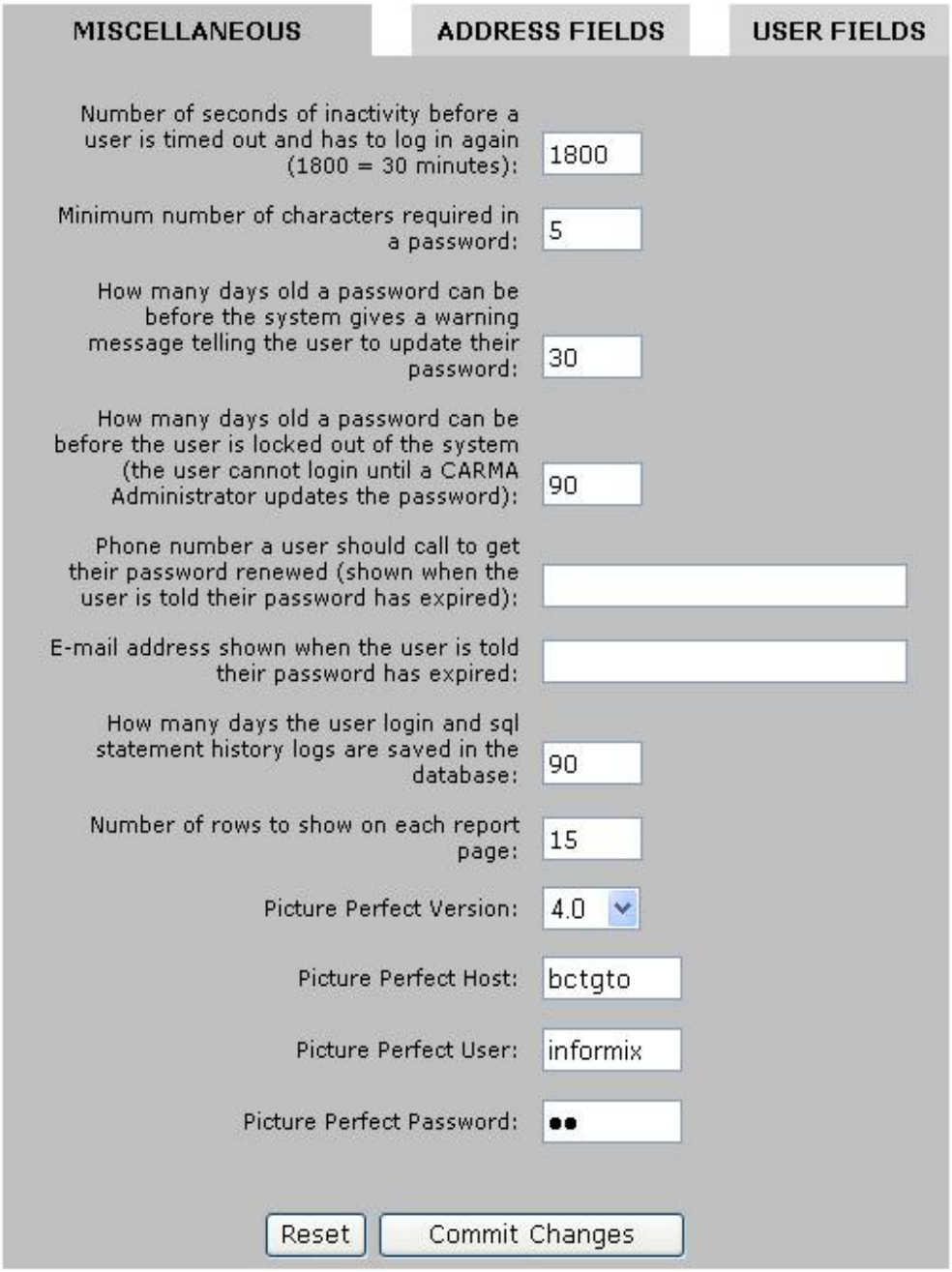
   ```
   Not redundant
   ```

   Note: If the import process is interrupted, you must remove the following file prior to trying again: /var/tmp/carma.lock

Creating accounts

Note: A database must have been imported prior to attempting to add an operator.

Figure 11: System Configuration Window


MISCELLANEOUS
ADDRESS FIELDS
USER FIELDS
Number of seconds of inactivity before a user is timed out and has to log in again (1800 = 30 minutes):
1800
Minimum number of characters required in a password:
5
How many days old a password can be before the system gives a warning message telling the user to update their password:
30
How many days old a password can be before the user is locked out of the system (the user cannot login until a CARMA Administrator updates the password):
90
Phone number a user should call to get their password renewed (shown when the user is told their password has expired):
E-mail address shown when the user is told their password has expired:
How many days the user login and sql statement history logs are saved in the database:
90
Number of rows to show on each report page:
15
Picture Perfect Version:
4.0
Picture Perfect Host:
bctgto
Picture Perfect User:
informix
Picture Perfect Password:
Reset
Commit Changes

To log in and set up your administrator and any operator account (required):

1. Point your browser to the CARMA server:

   `http://carma.utcfireandsecurity.com/carma/`

   Where carma.utcfireandsecurity.com is the name of the CARMA server you just configured.

2. Log on using the following authentication information:

   Username: admin
   Password: admin

3. Once logged in, click System Administration.
4. Under Advanced Settings, select Configure.
5. Use this form to specify the following information:
   - Administrator's phone number
   - Administrator's e-mail
   - Picture Perfect version
   - Picture Perfect host name
   - Picture Perfect user name
   - Picture Perfect password

   When complete, click Commit Changes.
6. Click Home, then click Change Your Password and specify a new password for Admin.
7. Once you have changed the password, you will have to log on again using the new password. You may add additional users by returning to the System Administration menu. Remember that you must select the departments or facilities that each user has permission to view. If you omit this step and generate a report, you will not see any departments in the list box and no reports will run properly.

   Note: To verify the version of CARMA that you are running, type: rpm -q carma [Enter]

Logging on from a remote system

If you want to log onto CARMA from a remote system, for example the Picture Perfect host, you will need to add the user login and password to the CARMA host.

To log on to CARMA from a remote system:

1. On the CARMA host, type:

   ```
   adduser <login> [Enter]
   passwd <login> [Enter]
   ```

2. From the remote system, type:

   ```
   telnet <login> [Enter]
   ```

Removing CARMA

To remove the CARMA software:

1. Log on as `root.`

   A # prompt displays.

2. To remove the CARMA software, type:

   `rpm -e carma [Enter]`

   Note: By default, this uninstall does not remove the CARMA database. If you reply Yes when asked if you want to delete the database, the entire CARMA database will be removed and any history no longer available on the Picture Perfect host will be permanently lost. If you reply No, the CARMA application will be removed, however, the database, which contains your Picture Perfect history, will still exist on the CARMA server.

   Messages similar to the following will appear on the screen:

   ```
   By default, Upgrade/Uninstall does NOT remove the CARMA
   database.

   Unless your upgrade instructions tell you to do this,
   choose "n".

   Do you wish to delete the CARMA database? (y/n)y.
   ```

3. Press Enter to accept the default “y.” The CARMA software is now removed.

   If you chose not to remove the CARMA database and decide to remove it at a later time, you can do so by typing the following command.

   `mysqladmin drop carma [Enter]`

Chapter 4
Upgrading CARMA from a previous version

Summary

The following steps required to upgrade from CARMA 4.0 to CARMA 4.5 are included in this chapter:

1. Back up your existing CARMA 4.0 database.
2. Install RedHat Enterprise Linux on your CARMA server.
3. Install CARMA 4.5.
4. Restore your CARMA 4.0 database.
5. Run the CARMA Database Upgrade Utility.

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Run the CARMA Database Upgrade Utility 62

Introduction

If you are installing CARMA for the first time, skip this chapter. This new version of CARMA, for Picture Perfect 4.5, supports filtering history data based on Time Zone context. It also supports database partitioning by Facility. In order to do so, the system must have the same three date/time contexts (UTC, Device and Host) for each history record, and it must be able to associate each history record with a Facility. During the upgrade process, the system will add a Facility to all existing badge history records. The Facility used will be the Facility of the Badge associated with the transaction. Database partitioning by Department is still supported as it was in previous releases, so the new Facility field need not be used for permission purposes unless you choose to do so.

You will need two blank tapes to perform the upgrade.

During the following procedures, when prompted for the CARMA password, type: `carma [Enter].`

Back up your existing CARMA 4.0 database

To back up your CARMA database:

1. Log on as root.
2. To create a disk file for your existing database backup, type:

   Linux v4.0
   `mysqldump --opt carma > /var/<filename> [Enter]`

   where <filename> is the name of the backup file. For example: carmabk101003.
3. When prompted, enter the root password, and then press Enter. The default root password is empty and does not require you to enter anything.
4. If backing up to a tape drive, insert a tape and type:

   `tar -cvf/dev/st0 /var/<filename> [Enter]`
5. If backing up to an external device such as a USB drive, create a folder called `var`, and then copy the backup file to this folder.

Install RedHat Enterprise Linux on your CARMA server

Refer to “Installing Red Hat Linux 4, Upgrade 7” on page 10 or “Installing Red Hat Linux 5.3” on page 20.

Install CARMA 4.5

Refer to “Installing CARMA” on page 27.

Restore your CARMA 4.0 database

Caution: Before restoring your database, you need to increase value of "Months to keep in carma.conf" or the import will drop data older than 4 months.

To increase the "Months to keep" value:

1. Start the VI editor, and type:

   ```
   vi /etc/carma.conf
   ```

2. Adjust the value as necessary and exit the VI editor.

Once you have successfully completed the installation of RedHat Linux and CARMA, and adjusted the number of months of data to import, restore the database.

To restore the CARMA database:

1. Type the following:

   ```
   cd /var [Enter]
   tar -xvf /dev/st0 [Enter]
   ```

2. Start the restore procedure by typing the following:

   ```
   mysql [Enter]
   ```

   Messages similar to the following display:

   ```
   Welcome to the MySQL monitor. Commands end with ; or \g.
   Your MySQL connection id is 2454 to server version:
   4.1.7-Max
   ```

```
Type ‘help;’ or ‘\h’ for help. Type ‘\c’ to clear the
buffer.
mysql>
```

3. Type the following:

   ```
   use carma; [Enter]
   ```

   Messages similar to the following display:

   ```
   Reading table information for completion of table and
   column names. You can turn off this feature to get a
   quicker startup with -A

   Database changed
   mysql>
   ```

4. Type: `source<filename>`

   Where `filename` is the absolute path of the converted file.

   For example:
   `source /var/carmaconv101003;`

5. Database files are restored. When returned to the `mysql>` prompt, type:

   ```
   quit [Enter]
   ```

Run the CARMA Database Upgrade Utility

To upgrade your old database to CARMA 4.5:

1. Log on as root and type:

   ```
   /usr/local/carma/carma_db_upgrade.sh
   ```

   The CARMA Database Upgrade Utility displays.

   ```
   CARMA DATABASE UPGRADE UTILITY

   NOTES:

   This script will upgrade the old CARMA database to
   support new PP versions. Normally, it will update the
   database schema. The upgrade may take some time,
   depending on the size of the existing database. Please
   make sure to take database backup before opting for
   upgrade options. You will not be able to revert database
   back to its original state after upgrade.
   ```

```
Used space in /var file system is 404MB

Free space in /var file system is 115205MB

Minimum free space required in /var for DB upgrade is
5796 KB

M E N U

(NOTE : CARMA version should be same as that of Picture
Perfect else import would not happen properly!!)


1) Upgrade CARMA Database to CARMA 4.x

2) Upgrade CARMA Database to InnoDB

3) Cancel


Please Select one choice (1, 2, 3):
```

2. Type `1` to upgrade to CARMA 4.5.

   You will be asked to confirm:

   ```
   You would not be able to revert back changes. Do you
   really want to upgrade. (y/n)? [n]
   ```

3. Type `y` to continue.

   Messages similar to the following display:

   ```
   carma_user table is up-to-date. Upgrade not required

   carma_facility_permissions table is up-to-date. Upgrade
   not required

   Upgrading carma_schedule table to support CARMA 4.5
   database schema

   carma_schedule table is now up-to-date

   carma_schedule_operator table is up-to-date. Upgrade not
   required

   Upgrading carma_saved_queries table to support CARMA 4.5
   database schema

   carma_saved_queries table is now up-to-date

   Upgrading carma_sys_config table & meaning tables to
   support CARMA 4.x database schema
   ```

```
carma_sys_config table & meaning tables are now up-to-
date

Upgrading alarm_history table to support CARMA 4.5
database schema

alarm_history table is now up-to-date

Upgrading alarm_historytmp table to support CARMA 4.5
database schema

alarm_historytmp table is now up-to-date

Upgrading alarm_history_resolved table to support CARMA
4.0 database schema

alarm_history_resolved table is now up-to-date

Upgrading badge_history table to support CARMA 4.5
database schema

badge_history table is now up-to-date

Upgrading badge_historytmp table to support CARMA 4.5
database schema

badge_historytmp table is now up-to-date

Upgrading badge_history_resolved table to support CARMA
4.5 database schema

badge_history_resolved table is now up-to-date

Upgrading operator_his table to support CARMA 4.5
database schema

operator_his table is now up-to-date

Upgrading operator_histmp table to support CARMA 4.5
database schema

Operator Historytmp Table is now up-to-date
```

4. To change the existing CARMA database to InnoDb, run the following command.

   ```
   /usr/local/carma/carma_db_upgrade.sh
   ```

   Text similar to the following displays:

   ```
                  CARMA DATABASE UPGRADE UTILITY

   NOTES:

   This script will upgrade the old CARMA database to
   support new PP versions. Normally, it will update the
   ```

```
database schema. The upgrade may take some time,
depending on the size of the existing database. Please
make sure to take database backup before opting for
upgrade options. You will not be able to revert database
back to its original state after upgrade.

Used space in /var file system is 5622MB

Free space in /var file system is 47058MB

Minimum free space required in /var for DB upgrade is
2653 MB


M E N U

(NOTE : CARMA version should be same as that of Picture
Perfect else import would not happen properly!!)

1) Upgrade CARMA Database to CARMA 4.x

2) Upgrade CARMA Database to InnoDB

3) Cancel

Please Select one choice (1, 2, 3):2
```

5. Type 2 to upgrade the CARMA database to InnoDB.

   You will be asked to confirm:

   ```
   You would not be able to revert back changes. Do you
   really want to upgrade. (y/n)? [n] y
   ```

6. Type `y` to continue.

   Messages similar to the following display:

   ```
   host is not a MyISAM table - doing nothing.

   Converting alarm to InnoDB

   Converting alarm_history to InnoDB

   Converting alarm_history_archive to InnoDB

   Converting alarm_history_resolved to InnoDB

   Converting alarm_historytmp to InnoDB

   Converting area to InnoDB

   Converting area_category to InnoDB

   Converting badge to InnoDB

   Converting badge_history to InnoDB
   ```

```
Converting badge_historySYNC to InnoDB
Converting badge_history_archive to InnoDB
Converting badge_history_archive_t to InnoDB
Converting badge_history_resolved to InnoDB
-----------------------------------------------
```

Note: Depending on your database size, the following step may take a few hours to a few days to complete.

7. Return to step 4, if the following message displays:

   ```
   One or more tables have failed to convert to InnoDB,
   please run the utility once again.
   ```

To import Picture Perfect database information, run the `import` utility by typing:

```
/etc/cron.daily/carma.cron
```

If you have verbose mode enabled, messages similar to the following display. See “Turning on verbose mode” on page 122 for information on enabling verbose mode.

```
We're = 4.5 (for plevel)
Not redundant!
```

Installation and restore is now complete. Proceed to Chapter 5.

Chapter 5
Getting started

Summary

This chapter covers the following topics:

- Logging in and out of CARMA
- Main Menus and Submenus
- Badge and Alarm Event History and Generated Reports
- Personnel Records and Generated Reports
- Operator History and Generated Reports
- Monitor Hosts and Micros
- System Administration

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Logging on

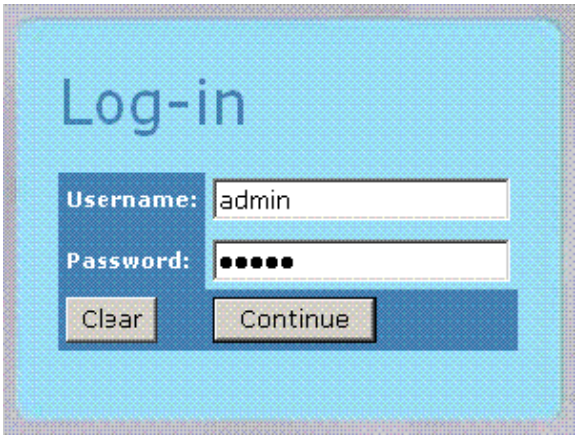
The login procedure for CARMA is similar to any other Web site login. Start up Internet Explorer and enter the URL of the CARMA host.

For example: `http://carmahost/carma/`

The first parameter is the name of the CARMA host and the second is the name of the CARMA software.

Enter your Username and Password assigned by the system administrator, and then click Continue.

Figure 12: CARMA Login Screen



At the bottom of the Login screen, the version of CARMA that you are running is displayed.

Note: Your password expires periodically and must be changed. You are prompted to change your password before it expires. Additionally, an e-mail message is sent when your password is within 10 days of expiration. If you do not change the password, you are locked out of the system until the administrator resets your password. See "Changing your password" on page 70.

Logging off

Logging off is not required by CARMA, but is a good idea for security reasons. Click the Logout button at the top of the main page to exit CARMA whenever you need to exit the program. The system automatically logs off an inactive user after a predetermined time (set by the system administrator).

Main menus and submenus

The main menu is a horizontal window frame entitled Card Access Report Management Application.

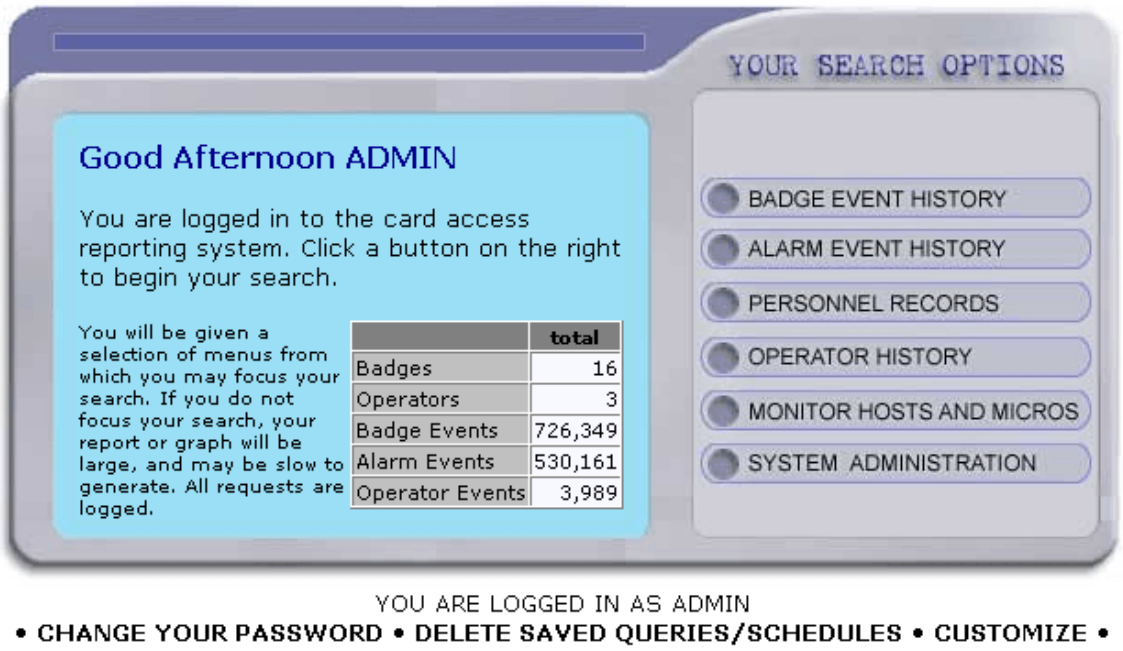
When you log on, the CARMA (Card Access Report Management Application) displays at the top of the window (see Figure 13 on page 70). Menu choices (search options) appear on the right side. Additionally you can:

- Change your password
- Delete Saved Queries
- Customize

The submenus appear on the right side. To display a menu, click the line of text representing the submenu. Note that menu items are dynamic based upon the operator's permissions. So, not all of the menu features displayed here may be present for another operator, if their assigned permissions do not allow access to that specific menu item.

For example, most user level operators such as a department manager would not normally be permitted to access the system administration menus or the operator history menus, since those functions would not generally apply to their needs.

Figure 13: CARMA Main Screen


YOUR SEARCH OPTIONS
Good Afternoon ADMIN
You are logged in to the card access reporting system. Click a button on the right to begin your search.
You will be given a selection of menus from which you may focus your search. If you do not focus your search, your report or graph will be large, and may be slow to generate. All requests are logged.
total
Badges 16
Operators 3
Badge Events 726,349
Alarm Events 530,161
Operator Events 3,989
BADGE EVENT HISTORY
ALARM EVENT HISTORY
PERSONNEL RECORDS
OPERATOR HISTORY
MONITOR HOSTS AND MICROS
SYSTEM ADMINISTRATION
YOU ARE LOGGED IN AS ADMIN
• CHANGE YOUR PASSWORD • DELETE SAVED QUERIES/SCHEDULES • CUSTOMIZE •

Changing your password

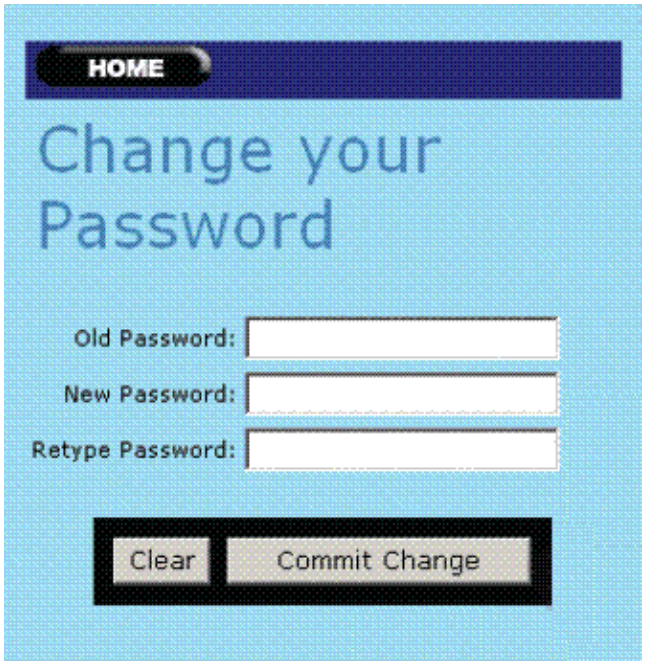
At the bottom of the main login window, your login name is listed. The number of days until your password expires is also listed as well as the version of CARMA that you are running. Additionally you can:

- Change your password
- Delete Saved Queries
- Customize

To change your password:

1. Click Change Your Password, and a new page appears prompting for a new password.
2. When finished, click Commit Change. The system records the changes and returns you to the Main Menu.

Figure 14: Change Your Password



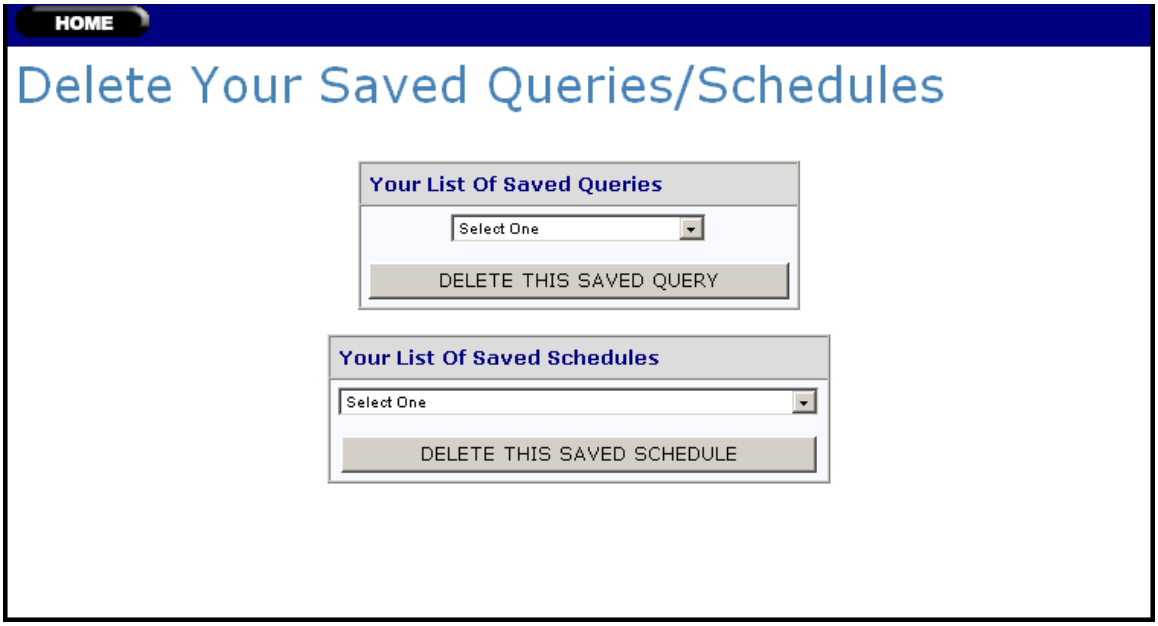
Deleting queries

You can also delete previously saved queries. Previously saved queries are reports that are saved for later use.

To delete a saved query:

1. At the bottom of the main menu page, click Delete Saved Queries. A new menu appears. Using a list box, you can view all previously saved queries.
2. If you would like to delete a query, choose the name of that query and then click Delete This Saved Query.

Figure 15: Delete Your Saved Queries



Another page displays and asks if you are sure you want to delete this query.

- If you are sure click Yes.
- If not click No.

If you click Yes, you are returned to the prior page to confirm that you have successfully deleted that query. If you click No, you are returned to the prior page, but no reports will have been deleted.

You can also delete previously saved schedules. Previously saved schedules are those reports that have been scheduled to be sent at recurring intervals to selected operators.

Deleting schedules

You can also delete previously saved schedules. Previously saved schedules are reports that are schedules to be run at specified times.

To delete a saved schedule:

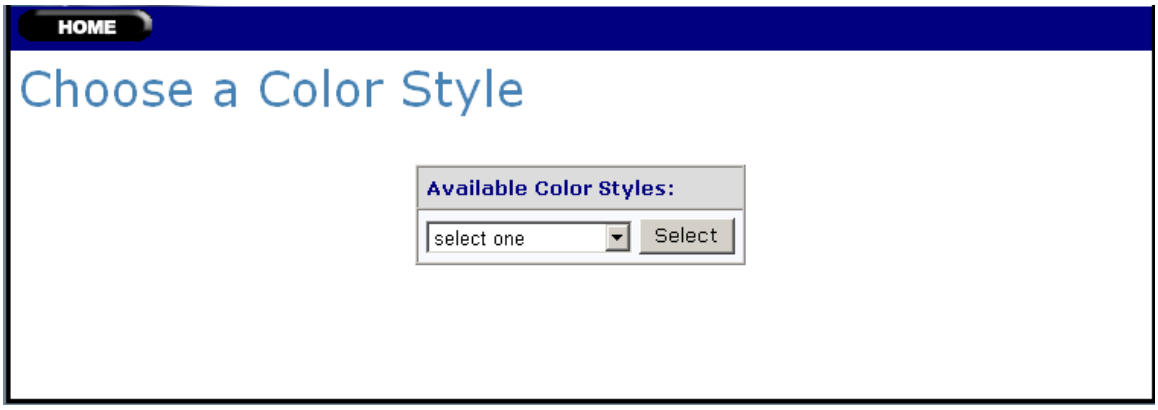
1. At the bottom of the main menu page, click Delete Saved Queries to display the Delete Your Saved Queries page. A list box at the bottom of the page contains all previously saved schedules.
2. Choose the name of the schedule you wish to delete and then click Delete This Saved Schedule. Another page will display and ask if you are sure you want to delete this schedule.

3. If you are sure click Yes; if not, click No. If you click Yes, you are returned to the prior page to confirm that you have successfully deleted that schedule. If you click No, you are returned to the prior page, but no schedules will have been deleted.

Customizing your window colors

You can customize your window colors in CARMA by clicking on Customize at the bottom of the screen on the Main Menu. A new page appears, containing a list box of available color schemes. Choose the preferred scheme and then click Select. Your screen color will change accordingly. CARMA uses cascading style sheets for color schemes, which may be customized with corporate color schemes and logos if desired. See your system administrator for additional color schemes that might be available.

Figure 16: Choose a Color Style

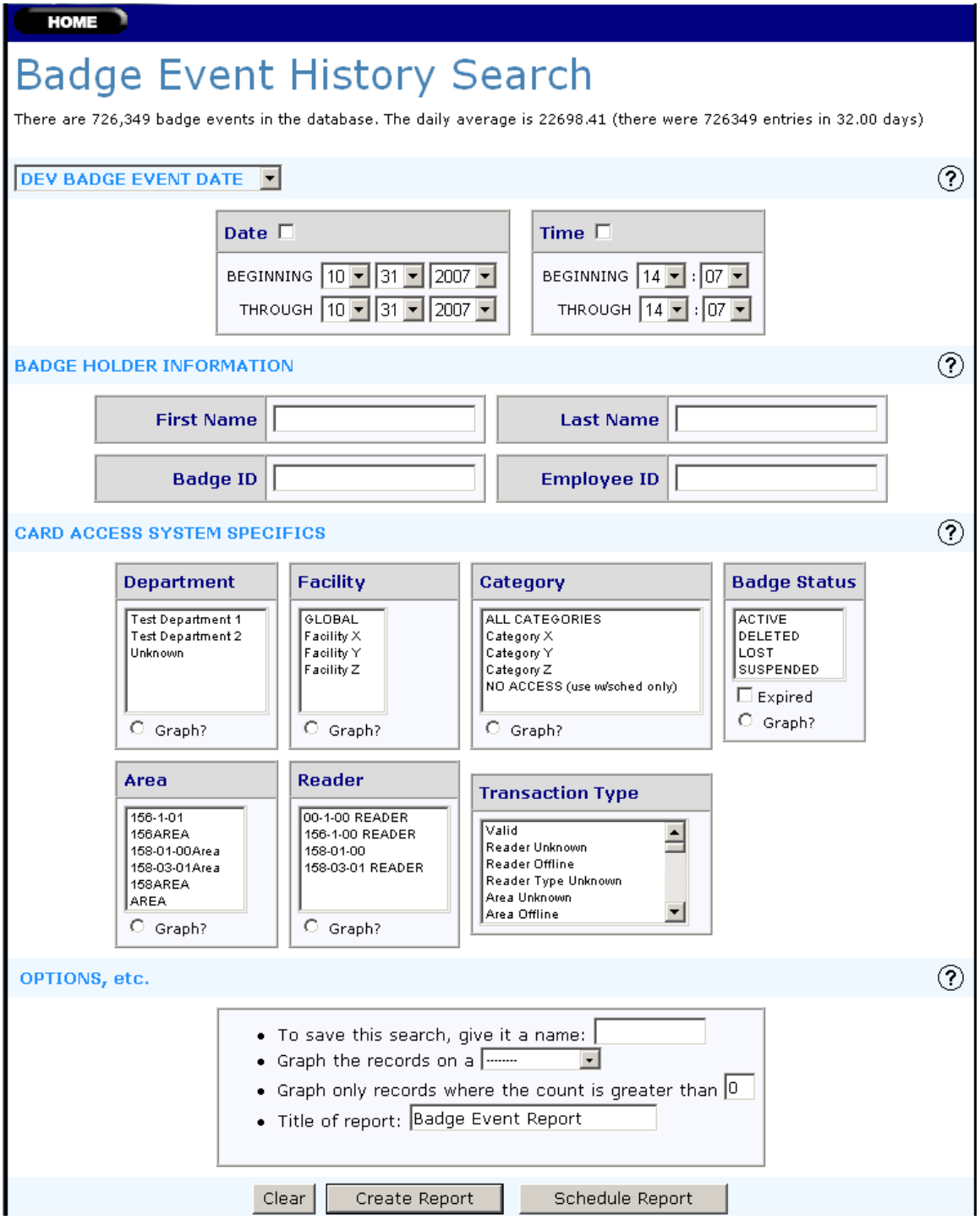


Badge event history

The Badge Event History Search allows you to obtain information regarding which doors a specific badge has opened within a certain time period. For example, you could use this feature to generate a report of the doors, on which an employee's badge was used, from January 1, 2000 through March 12, 2000.

This function can be accessed by choosing Badge Event History from the main page of CARMA.

Figure 17: Badge Event History Search



To select the time zone in which the report data is to be displayed:

1. Click DEV BADGE EVENT DATE.

2. Select either Dev, HOST, or UTC to specify a context of either Device, Host, or Coordinated Universal Time (UTC) for the report data.

To search badge history for a specific time period:

1. Use the check boxes next to Date and Time in the first section of this page entitled Badge Event Date.
2. Start by selecting the Dates you want to include in the report. If you would like to narrow the search further, you can also enter specific times.
3. Scroll to the bottom of the screen and click Create Report.

You can also search badge history by Badge ID#, Employee ID #, Last Name, or First Name. The fields are not case-sensitive, so upper case and lower case characters are treated the same. Badge ID# or Employee ID# produces the most accurate results, as there may be several different employees with the same first or last names.

To create a report for a specific badge:

1. Enter the information you choose to use in the specified fields which are found in the Badge Holder Information section.
2. After entering the information, scroll down to the bottom of the page and click Create Report. This displays a complete badge event history for that particular badge.
3. You can also use both the Badge Event Date and the Badge Holder Information sections to narrow your search. Enter the information needed in both sections and click Create Report at the bottom of the page.
4. You also have the option of choosing from the Card Access System Specifics. In this area, which is found in the third section on the Badge Event History search page, you can choose selections under Department, Facility, Category, Badge Status, Area, Reader, and Transaction Type to narrow your search. A menu from which no selections have been made will not be applied to the search category.

   For example, if you do not select any of the entries under Category, all options under Category are considered for the purpose of the search. Holding

down the CTRL key while clicking on submenu items allows multiple selections within that submenu as well as the ability to deselect an item.

5. If at any time you are entering information, have made an error, and would like to clear the screen, click Clear at the bottom of the page and the information you have entered is cleared.

To graph your selections in the Card Access System Specifics section:

1. Choose at least two of the selections under the same heading. For example, choose Active and Deleted.

   You cannot graph more than one group of selections at a time. For example, if you choose to graph Active and Deleted under the Badge Status heading, you cannot also graph selections under the Category heading.

   Note: The Card Access System Specifics should not be used on their own. Instead, it should be used in conjunction with either the Badge Holder Information section and/or the Badge Event Date section. It is used to further narrow these two types of searches.

2. Click Graph? under that group of selections.
3. After you have made your selections, click Graph?. Choose which type of graph you would like in the Options box at the bottom of the page. Your graph options are Pie, Line, Column or Bar graph. If you do not choose a type of graph to use, the standard report format is generated instead.

   If you have inadvertently chosen to graph selections, you must scroll to the bottom of the page and click Clear to remove the graph button that you had selected.

To choose how you would like the report to list badge events:

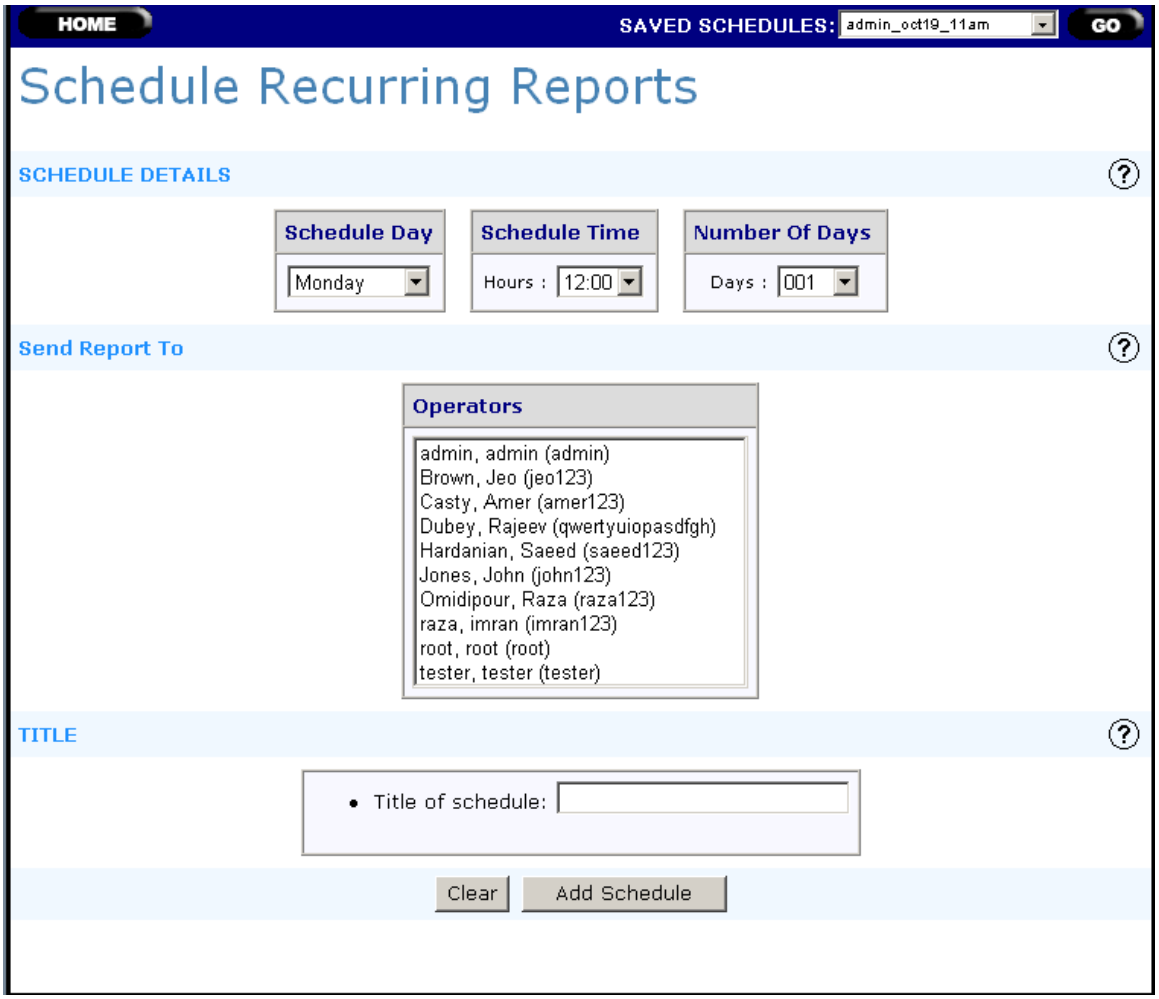
Note at the bottom of the Badge Event History page is a box entitled Options, etc.

- You may elect to give the report a name so that you can run the same report again later.
- If you previously chose to graph your report, you may select the graph type.
- If you previously chose to graph your report, you may elect to include only those records where the count is greater than a number of your choosing.
- You may also change or append the default report title when it is generated by changing the text in the Title of Report text box.

Recurring reports

Schedule reports allows you to create a report based on specific search criteria and then schedule the report to be sent to selected operators on a recurrent basis. The scheduled report will automatically be sent to those operators every week on the scheduled day and time. The reports are sent as a zipped .html file attachment.

Figure 18: Schedule Recurring Reports



To schedule a recurring report:

1. Enter the desired search criteria for the report, and instead of Create Report, click Schedule Report. The Schedule Recurring Reports page will appear.
2. Select the schedule day and schedule time that you want to send the report to selected operators.

3. Select the number of days that the report covers. For example, if you want data for the past 24 hours, select 1 and if you want data for the past week, select 7. The maximum number of days from which to include data is 365.
4. Go to the Send Report To section and select a list of operators to whom you want to send reports. Holding down the CTRL key, while clicking on submenu items, allows multiple selections within that submenu as well as the ability to deselect an item.
5. Enter the report title in the TITLE section and then click Add Schedule to add this schedule. Click Clear button to remove the selections.

Note: A scheduled report cannot be saved if:

- Any graph options are selected.
- The title is left blank.
- Another scheduled report with the same title has been created by the same login.
- The Date option is selected.

Badge event report page

Figure 19: Badge Event Report

HOME
<< BACK
SAVE
PRINT
E-mail this to:
HTML E-mail
TEXT E-mail
Go
REPORT LIMITED BY LAST NAME, TRANSACTION TYPE
5 RECORDS FOUND
-- PAGE 1 OF 1 --
DEV DATE/TIME | L NAME | F NAME | BADGE ID | EMP ID | STATUS | DEPARTMENT | FACILITY | READER | T-TYPE
02/7/2005 03:42:35 | Kasi | HK | 154272051818 | | ACTIVE | Unknown | GLOBAL | C0464 3025 SERVER ROOM OUT | Reader Offline
02/7/2005 03:42:38 | Kasi | HK | 154272051818 | | ACTIVE | Unknown | GLOBAL | C0464 3025 SERVER ROOM OUT | Reader Offline
02/7/2005 03:42:40 | Kasi | HK | 154272051818 | | ACTIVE | Unknown | GLOBAL | C0464 3025 SERVER ROOM OUT | Reader Offline
02/7/2005 03:42:42 | Kasi | HK | 154272051818 | | ACTIVE | Unknown | GLOBAL | C0464 3025 SERVER ROOM OUT | Reader Offline
02/10/2005 03:45:31 | Kasi | HK | 154272051818 | | ACTIVE | Unknown | GLOBAL | HK READER 1-1 | Reader Offline
view sql

To navigate the generated report page:

1. The number of records that particular report contains is listed at the top of that report. If a report has multiple pages, you can move to the next page in the report by clicking Next.
2. Click End to move to the last page of the report.
3. Click Back to return to the query page that you used to create the report.
4. Click Home to return to the CARMA main page.

To print any of the above reports:

Note: The Print button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Print.

   The report is formatted so that all returned rows from the query appear on a single page. You may then sort the report by column headers as explained below.
2. Click Print to send the report to your local printer.
3. Click Back to return to the report page.

To save the reports:

Note: The Save button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Save.

   The report is saved as a text file and may be imported into a desktop application. If you are using Microsoft Excel, the file is imported as a Microsoft Excel spreadsheet. Please note that you will have to convert the BID (Badge ID) column to a real number format, instead of the scientific number format to which it defaults.
2. On the report page, you can sort the report by clicking the column headers. Click twice on a column header in the report to change the sort order.

   For example, if the report is sorted with the latest events first, click Date and it will be sorted with the earliest events first.
3. Click Date again and the report displays the latest events first.
4. If you would like the report to be sorted in alphabetical order by name, instead of sorting by date, click the Name column. Click Date to sort the report by date order.

To view User Badge information and photos:

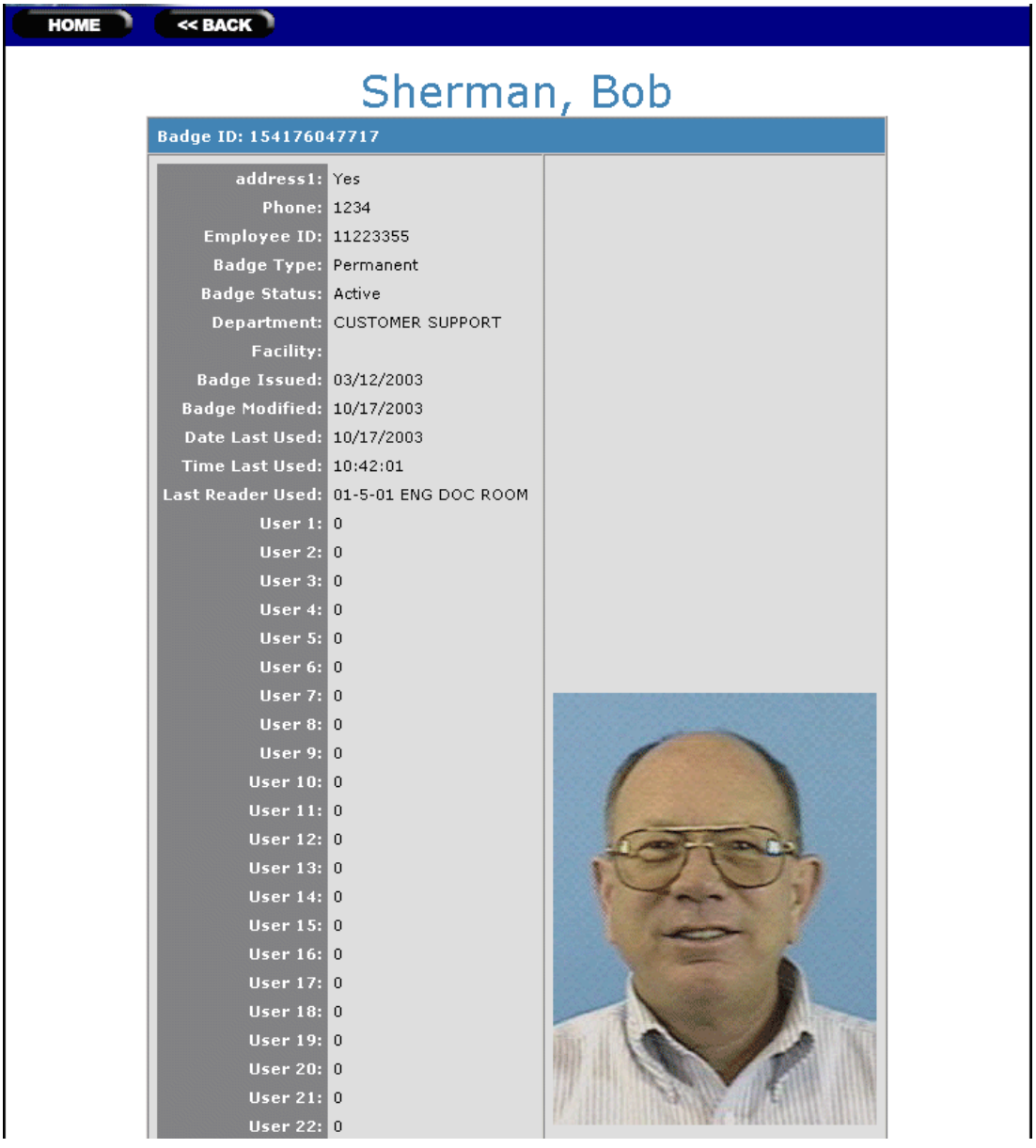
1. Create the report and, when the report displays, click on the Badge ID of the user whose information and photo, you wish to view.

   A screen similar to the following will display.

   Note: If the Picture Perfect database is not accessible when this page is opened, the Photo will not be displayed and an error message will be displayed.

2. Click Back to return to the report page.

Figure 20: Badge ID Information and Photo



To e-mail any of the above reports:

1. Create the report. When the report is on the screen, go to the top of the page on the right side and enter an e-mail address in the E-mail this to box.
2. Select the HTML option to send e-mail in HTML format or select TEXT to send in pipe delimited format. The file will be sent as a zipped attachment.
3. Click Go. A report will be sent to the specified e-mail address.

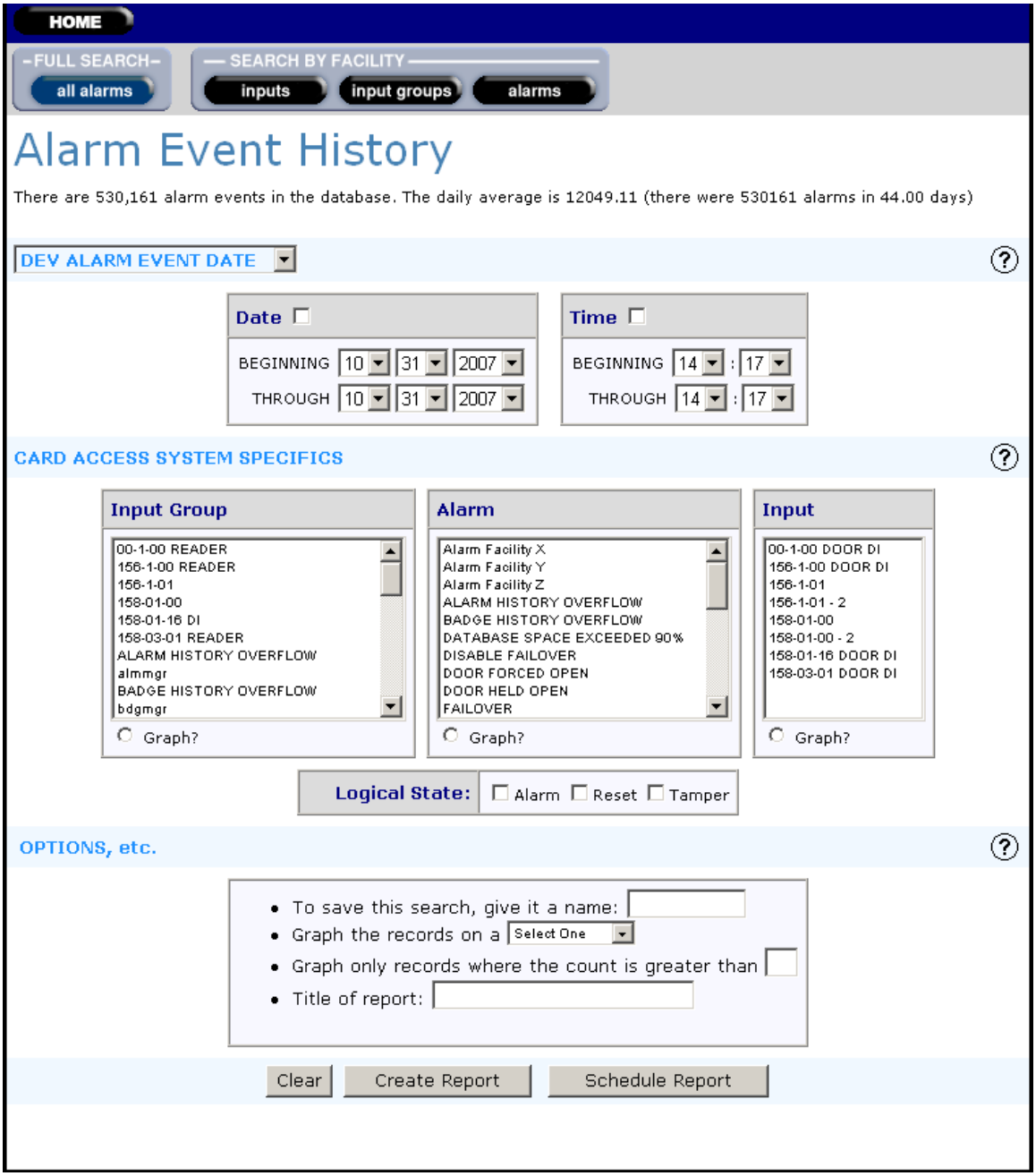
To obtain help with selected sections:

1. Along the right side of the Badge Event History page, the ?s (question marks) appear next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window.

Alarm event history

The Alarm Event History search allows you to retrieve information about all alarms that have occurred in a specific date range and/or time frame. You access this feature by clicking on Alarm Event History on the main page of CARMA.

Figure 21: Alarm Event History Search



To select the time zone in which the report data is to be displayed:

1. Click DEV ALARM EVENT DATE.

2. Select either Dev, HOST, or UTC to specify a context of either Device, Host, or Coordinated Universal Time for the report data.

To retrieve alarm information:

1. Choose the specific dates and/or times for which you would like to generate a report, from the first section of this page entitled Alarm Event Date.
2. Use the list boxes in this section. Scroll down to the bottom of the page and click Create Report.

To narrow the search further:

1. Note the second section entitled Card Access System Specifics, where you will find the headings Input Group, Alarm, Input, and Logical State. Then:
2. Make selections under the Input Group, Alarm, Input, and Logical State sections to limit your search to include those specific options.
3. Choose your selections from these headings by clicking on the selection. Then, scroll to the bottom of the page and click Create Report.
4. Holding down the CTRL key while selecting submenu items allows for multiple selections within that submenu.

   A menu from which no selections have been made will not be applied to the search category. For example, if you do not select any of the entries under Alarm, all options under Alarm, are considered in the search.

To generate the reports by facility:

1. At the top of the page, under Search by Facility, select Inputs, Input Groups, or Alarms. When you choose one of these options, a new screen displays.
2. Under Card Access Systems Specifics there is a Facility heading next to the heading of either Alarm, Input or Input Groups, depending on which option you chose. Select the desired options under these new headings.
3. Select the logical state of the alarm: Alarm, Reset, or Tamper.
4. Click Create Report.

To choose how you would like the report to list badge events:

Note at the very bottom of the Alarm Event History page is a box entitled Options, etc.

- You may elect to give the report a name so that you can run the same report again later.
- If you previously chose to graph your report, you may select the graph type.

- If you previously chose to graph your report, you may elect to include only those records where the count is greater than a number of your choosing.
- You may also change or append the default report title when it is generated by changing the text in the Title of Report text box.

To graph your selections in the Card Access System Specifics section:

1. Choose at least two of the selections under the same heading. For example, choose Door Forced Open and Door Held Open.

   You cannot graph more than one group of selections at a time. For example, if you choose to graph Door Forced Open, Door Held Open and Invalid Badge under the Alarm heading, you cannot also graph selections under the Input heading.
2. Click Graph? under that group of selections.
3. After you have made your selections, click Graph?. Choose which type of graph you would like in the Options, etc box at the bottom of the page. Your graph options are Pie, Line, Column or Bar graph. If you do not choose a type of graph to use, the standard report format is generated instead.

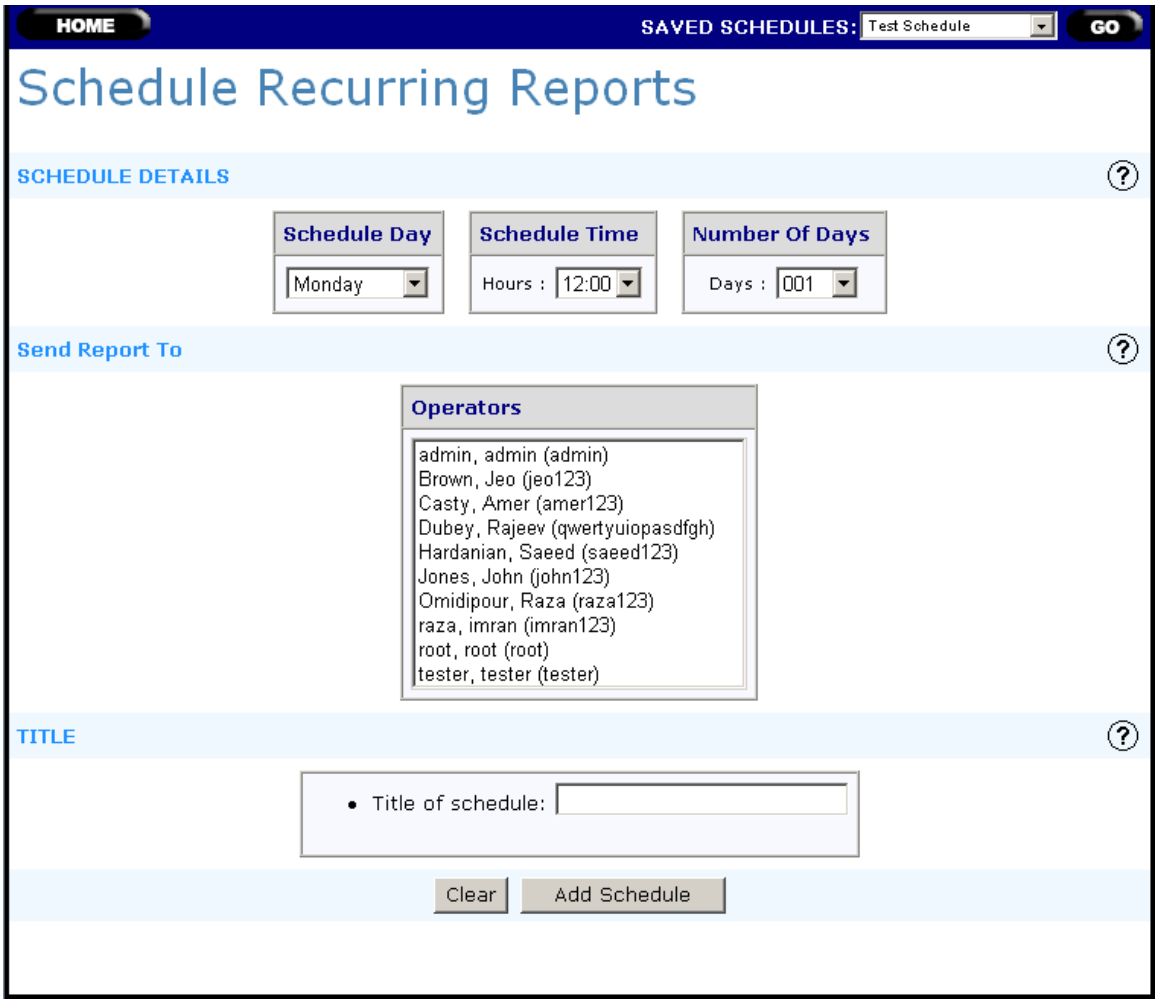
   If you have inadvertently chosen to graph selections, you must scroll to the bottom of the page and click Clear to remove the graph button that you had selected.

Recurring reports

Schedule reports allows you to create a report based on specific search criteria and then send the report to selected operators on a recurrent basis. The scheduled report will automatically be sent to those operators every week on the scheduled day and time. The reports are sent as a zipped .html file attachment

To schedule a recurring report:

Figure 22: Schedule Recurring Reports



1. Enter the desired search criteria for the report, and instead of Create Report, click Schedule Report. The Schedule Recurring Reports page will appear.
2. Select the schedule day and schedule time that you want to send the report to selected operators.
3. Select the number of days that the report covers. For example, if you want data for the past 24 hours, select 1 and if you want data for the past week, select 7. The maximum number of days from which to include data is 365.

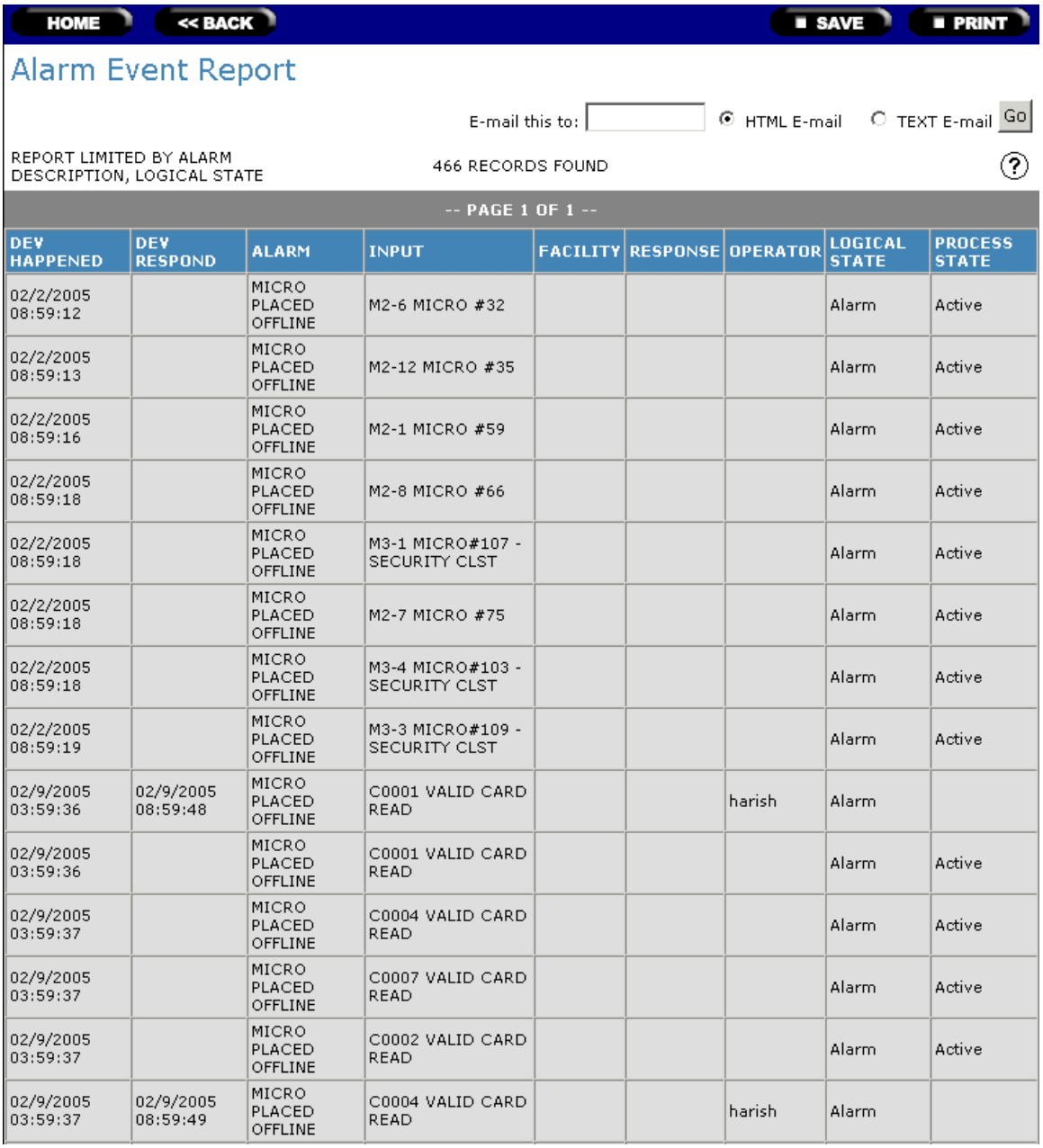
4. Go to the Send Report To section and select a list of operators to whom you want to send reports. Holding down the CTRL key while clicking on submenu items allows multiple selections within that submenu as well as the ability to deselect an item.
5. Enter the report title in the TITLE section and then click Add Schedule to add this schedule. Click Clear button to remove the selections.

   Note: A scheduled report cannot be saved if:

   - Any graph options are selected
   - The title is left blank
   - Another scheduled report with the same title has been created by the same login.
   - Date option is selected

Alarm event history report page

Figure 23: Alarm Event History Report



HOME << BACK SAVE PRINT

Alarm Event Report

E-mail this to: HTML E-mail TEXT E-mail Go

REPORT LIMITED BY ALARM DESCRIPTION, LOGICAL STATE

466 RECORDS FOUND

-- PAGE 1 OF 1 --

DEV HAPPENED	DEV RESPOND	ALARM	INPUT	FACILITY	RESPONSE	OPERATOR	LOGICAL STATE	PROCESS STATE
02/2/2005 08:59:12		MICRO PLACED OFFLINE	M2-6 MICRO #32				Alarm	Active
02/2/2005 08:59:13		MICRO PLACED OFFLINE	M2-12 MICRO #35				Alarm	Active
02/2/2005 08:59:16		MICRO PLACED OFFLINE	M2-1 MICRO #59				Alarm	Active
02/2/2005 08:59:18		MICRO PLACED OFFLINE	M2-8 MICRO #66				Alarm	Active
02/2/2005 08:59:18		MICRO PLACED OFFLINE	M3-1 MICRO#107 - SECURITY CLST				Alarm	Active
02/2/2005 08:59:18		MICRO PLACED OFFLINE	M2-7 MICRO #75				Alarm	Active
02/2/2005 08:59:18		MICRO PLACED OFFLINE	M3-4 MICRO#103 - SECURITY CLST				Alarm	Active
02/2/2005 08:59:19		MICRO PLACED OFFLINE	M3-3 MICRO#109 - SECURITY CLST				Alarm	Active
02/9/2005 03:59:36	02/9/2005 08:59:48	MICRO PLACED OFFLINE	C0001 VALID CARD READ			harish	Alarm	
02/9/2005 03:59:36		MICRO PLACED OFFLINE	C0001 VALID CARD READ				Alarm	Active
02/9/2005 03:59:37		MICRO PLACED OFFLINE	C0004 VALID CARD READ				Alarm	Active
02/9/2005 03:59:37		MICRO PLACED OFFLINE	C0007 VALID CARD READ				Alarm	Active
02/9/2005 03:59:37		MICRO PLACED OFFLINE	C0002 VALID CARD READ				Alarm	Active
02/9/2005 03:59:37	02/9/2005 08:59:49	MICRO PLACED OFFLINE	C0004 VALID CARD READ			harish	Alarm	

To navigate the generated report page:

1. The number of records that particular report contains is listed at the top of that report. If a report has multiple pages, you can move to the next page in the report by clicking Next.
2. Click End to move to the last page of the report.

3. Click Back to return to the query page that you used to create the report.
4. Click Home to return to the CARMA main page.

To print any of the above reports:

Note: The Print button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Print.

   The report is formatted so that all returned rows from the query appear on a single page. You may then sort the report by column headers as explained below.
2. Click Print to send the report to your local printer.
3. Click Back to return to the report page.

To save the reports:

Note: The Save button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Save.

   The report is saved as a text file and may be imported into a desktop application. If you are using Microsoft Excel, the file is imported as a Microsoft Excel spreadsheet.
2. On the report page, you can sort the report by clicking the column headers. Click twice on a column header in the report to change the sort order.

   For example, if the report is sorted with the latest events first, click Happened and it will be sorted with the earliest events first.
3. Click Happened again and the report displays the latest events first.
4. If you would like the report to be sorted in alphabetical order by name, instead of sorting by date, click the Alarm column. Click Happened to sort the report by date order.

To e-mail any of above reports:

1. Create the report. When the report is on the screen, go to the top of the page on the right side and enter an e-mail address in the E-mail this to box.
2. Select the HTML option to send e-mail in HTML format or select TEXT to send in pipe delimited format. The file will be sent as a zipped attachment.
3. Click Go. A report will be sent to the specified e-mail address.

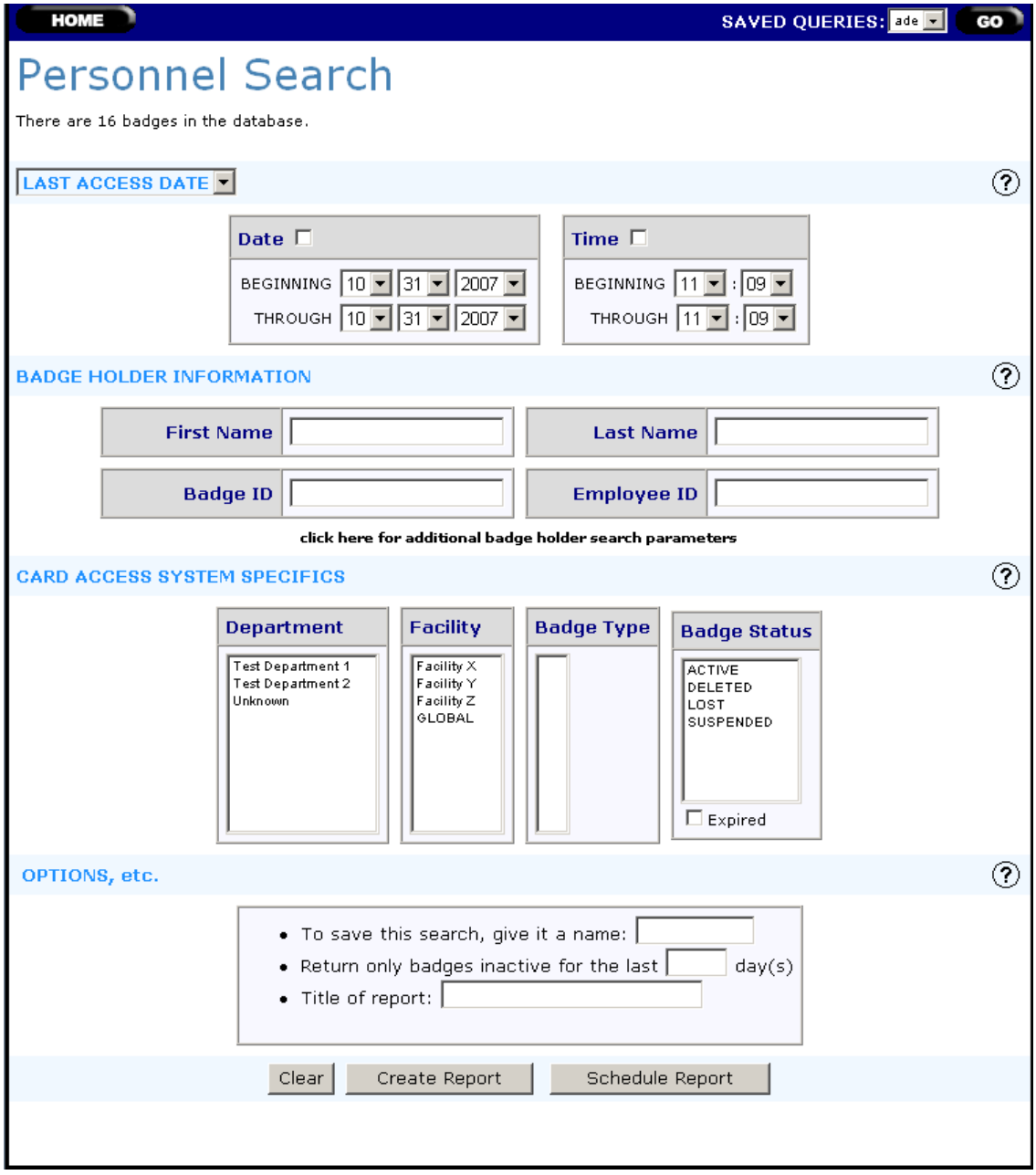
To obtain help with selected sections:

1. Along the right side of the Alarm Event History page, the ?s (question marks) appear next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window.

Personnel records

The Personnel Records Search allows you to retrieve specific information about an employee's badge status, type and usage. To access this feature, click Personnel Records on the main page of CARMA.

Figure 24: Personnel Search



To search personnel records for a specific time period:

1. Use the check box next to Date and Time in the first section of this page to determine selection criteria (such as Last Access Date).
2. Start by selecting the dates you want to include in the report by using the list box. If you would like to narrow the search further, you can also enter in specific times by using the list box.
3. Scroll to the bottom of the screen and click Create Report.

Specific searches

You can search personnel records by Badge ID#, Employee ID #, Last Name of Employee or First Name of Employee if you need to generate a report on a certain employee's badge.

To search by specific information:

1. Enter the information you choose to use in the specified field, which is found in the second section of this page entitled Badge Holder Information.

   Badge ID# or Employee ID# produces the most accurate results, as there may be several different employees with the same first or last names.

2. Scroll down to the bottom of the page and click Create Report. This displays personnel information.

3. Narrow your search by using both of the above-mentioned searches together. Enter the needed information under Date/Time and Badge Holder Information and then scroll to the bottom of the page and click Create Report.

4. You also have the option of choosing from the Card Access System Specifics. In this area, found in the third box on the Personnel Records page, you can choose selections under Department, Facility, Badge Type, and Badge Status to narrow your search. A menu from which no selections have been made will not be applied to the search category.

   For example, if you do not select any of the entries under Department, all options under Department are considered for the purpose of the search.

5. Press the CTRL key while clicking on submenu items to allow for multiple selections within that submenu.

Note: The Card Access System Specifics should not be used alone but, instead, should be used in conjunction with the Date/Time section and/or the Badge Holder Information section. It is used to narrow these two types of searches down further.

To choose a certain number of days worth of badge inactivity for the report:

1. Note at the very bottom of the Personnel Records page is a box entitled Options, etc.

   - You may elect to give the report a name so that you can run the same report again later.
   - For example, to see how many badges have not been used for the last 180 days, enter `180` in the field. You may further narrow this search by selecting items from Badge Status and/or Badge Type.

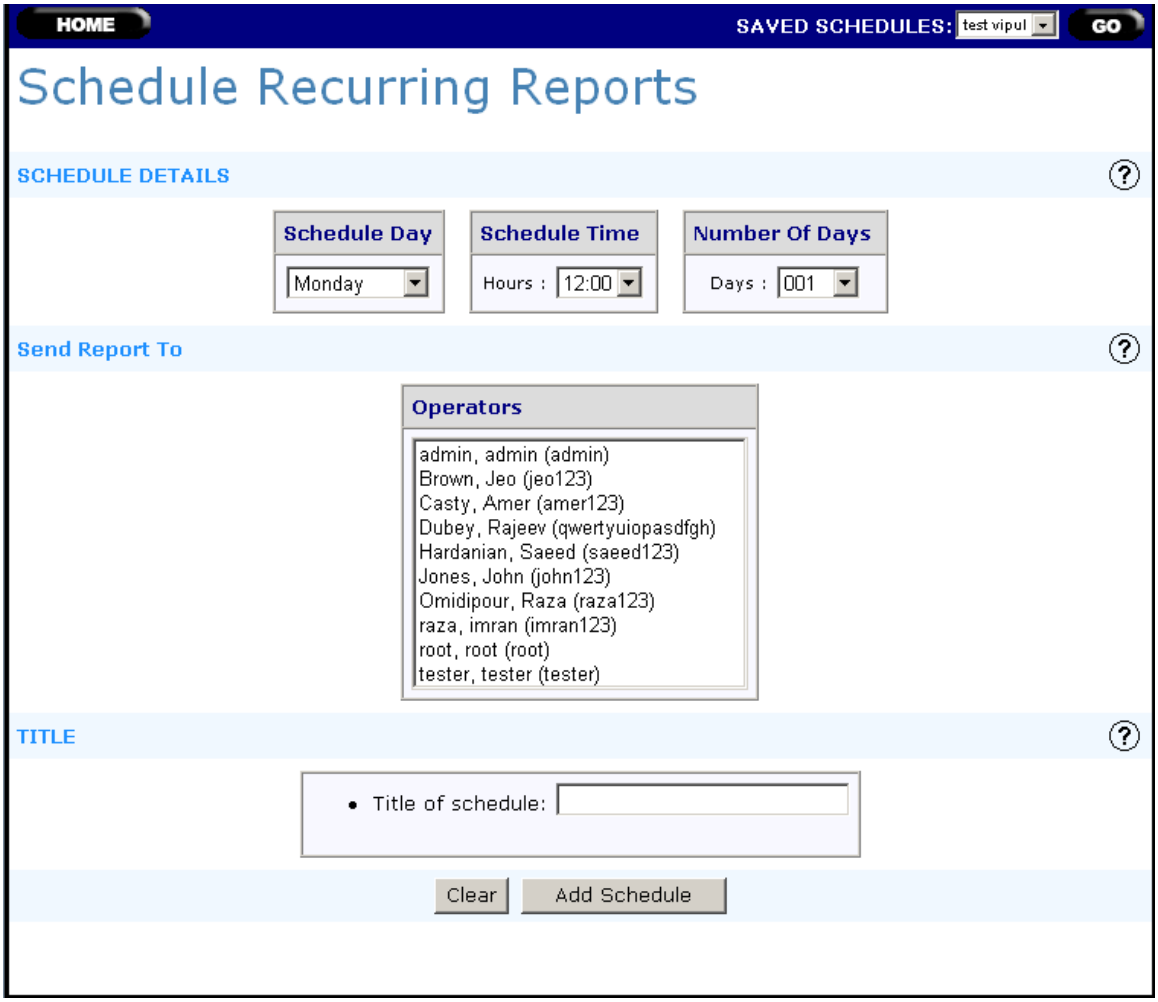
- You may also change or append the default report title for the report when it is generated by changing the text in the box marked Title of Report.

2. If at any time you have made an error while entering information and would like to clear the screen, click Clear at the bottom of the page and the information you have entered is cleared.

Recurring reports

Schedule reports allows you to create a report based on specific search criteria and then schedule the report to be sent to selected operators on a recurrent basis. The scheduled report will automatically be sent to those operators every week on the scheduled day and time. The reports are sent as a zipped .html file attachment

Figure 25: Schedule Recurring Reports



To schedule a recurring report:

1. Enter the desired search criteria for the report, and instead of Create Report, click Schedule Report. The Schedule Recurring Reports page will appear.
2. Select the schedule day and schedule time that you want to send the report to selected operators.
3. Select the number of days that the report covers. For example, if you want data for the past 24 hours, select 1 and if you want data for the past week, select 7. The maximum number of days from which to include data is 365.

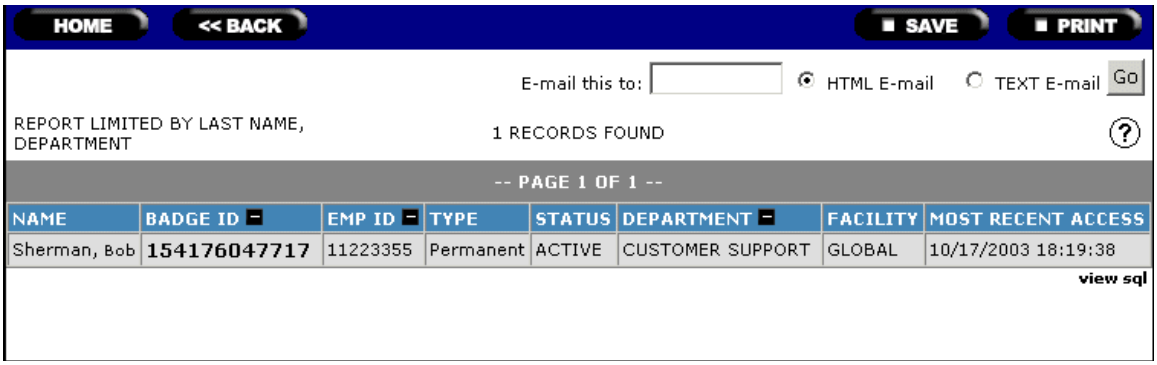
   Note: Only those records with a date/time that falls in the date/time span requested (Number of Days) will be included on a scheduled report. For example, if a badge has never been used (has Most Recent Access empty), it will never appear on a scheduled Personnel report that uses Last Access Date as date criteria.
4. Go to the Send Report To section and select a list of operators to whom you want to send reports. Holding down the CTRL key, while clicking on submenu items, allows multiple selections within that submenu as well as the ability to deselect an item.
5. Enter the report title in the TITLE section and then click Add Schedule to add this schedule. Click Clear button to remove the selections.

Note: A scheduled report cannot be saved if:

- The title is left blank
- Another scheduled report with the same title has been created by the same login.
- Date option is selected

Personnel report page

Figure 26: Personnel Report



To navigate the generated report page:

1. The number of records that particular report contains is listed at the top of that report. If a report has multiple pages, you can move to the next page in the report by clicking Next.
2. Click End to move to the last page of the report.
3. Click Back to return to the query page that you used to create the report.
4. Click Home to return to the CARMA main page.

To print any of the above reports:

Note: The Print button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Print.

   The report is formatted so that all returned rows from the query appear on a single page. You may then sort the report by column headers as explained below.
2. Click Print to send the report to your local printer.
3. Click Back to return to the report page.

To save the reports:

Note: The Save button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Save.

   The report is saved as a text file and may be imported into a desktop application. If you are using Microsoft Excel, the file is imported as a Microsoft Excel spreadsheet. Please note that you will have to convert the BID (Badge ID) column to a real number format, instead of the scientific number format to which it defaults.

2. On the report page, you can sort the report by clicking the column headers. Click twice on a column header in the report to change the sort order.

   For example, if the report is sorted with the latest events first, click Date and it will be sorted with the earliest events first.

3. Click Date again and the report displays the latest events first.

4. If you would like the report to be sorted in alphabetical order by name, instead of sorting by date, click the Name column. Click Date to sort the report by date order.

To e-mail any of above reports:

1. Create the report. When the report is on the screen, go to the top of the page on the right side and enter an e-mail address in the E-mail this to box.

2. Select the HTML option to send e-mail in HTML format or select TEXT to send in pipe delimited format. The file will be sent as a zipped attachment.

3. Click Go. A report will be sent to the specified e-mail address.

To obtain help with selected sections:

1. Along the right side of the Personnel Search page, the ?s (question marks) appear next to each section.

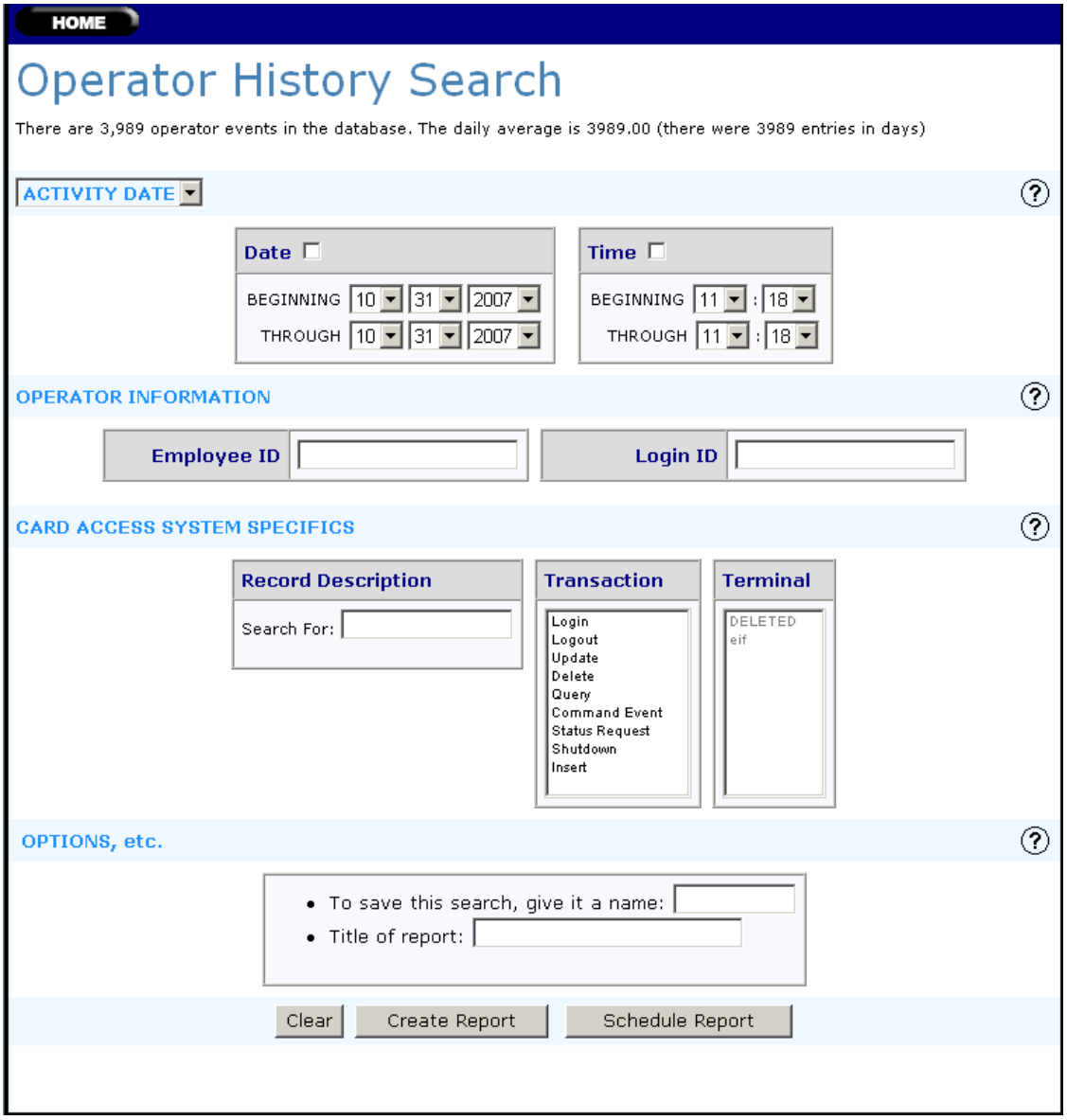
2. Click the ? and a window displays information pertaining to the selected section.

3. Click Close to close this window.

Operator history

The Operator History Search allows you to display specific information about changes a Picture Perfect operator has made in the system and when they were made. To access this feature click, Operator History on the main page of CARMA.

Figure 27: Operator History Search



To select the time zone in which the report data is to be displayed:

1. Click ACTIVITY DATE.

2. Select either HOST, OPR, or UTC to specify a context of either Host, Operator, or Coordinated Universal Time for the report data.

To search operator history for a specific time period:

1. Use the list boxes next to Date and Time in the first section of this page entitled Activity Date.
2. Start by selecting the dates on which you want to generate the report by using the list box.
3. If you would like to narrow the search further, enter specific times by using the list box. You may then scroll to the bottom of the screen and click Create Report.

To search operator history by Employee ID # or Login ID # if you need a report on a certain operator:

1. Enter the information you choose to use in the specified fields, which is found in the second section of this page entitled Operator Information.
2. Scroll down to the bottom of the page and click Create Report. This displays a complete operator history for that particular operator.
3. Narrow your search by using both of the above-mentioned searches together. To do this, enter in the needed information under Activity Date and Operator Information and then scroll to the bottom of the page and click Create Report.
4. You may also choose from the Card Access System Specifics. In this area, which is found in the third section of the Operator History page, you can choose selections under Record Description, Transaction, and Terminal to narrow your search. A menu from which no selections have been made will not be applied to the search category.

   For example, if you do not select any of the entries under Transaction, all options under Transaction are considered for the purpose of the search.
5. In this case the Card Access System Specifics can be used alone, without having to choose any information from the Activity Date or Operator Information sections.

   For example, if you would like to generate a report on all logins, choose Login under Transaction and click Create Report. The resulting report shows all operator logins.

To choose how you would like the report to list badge events:

Note at the very bottom of the Operator History page is a box entitled Options, etc.

- You may elect to give the report a name so that you can run the same report again later.
- You may also change or append the default report title when it is generated by changing the text in the Title of Report text box.

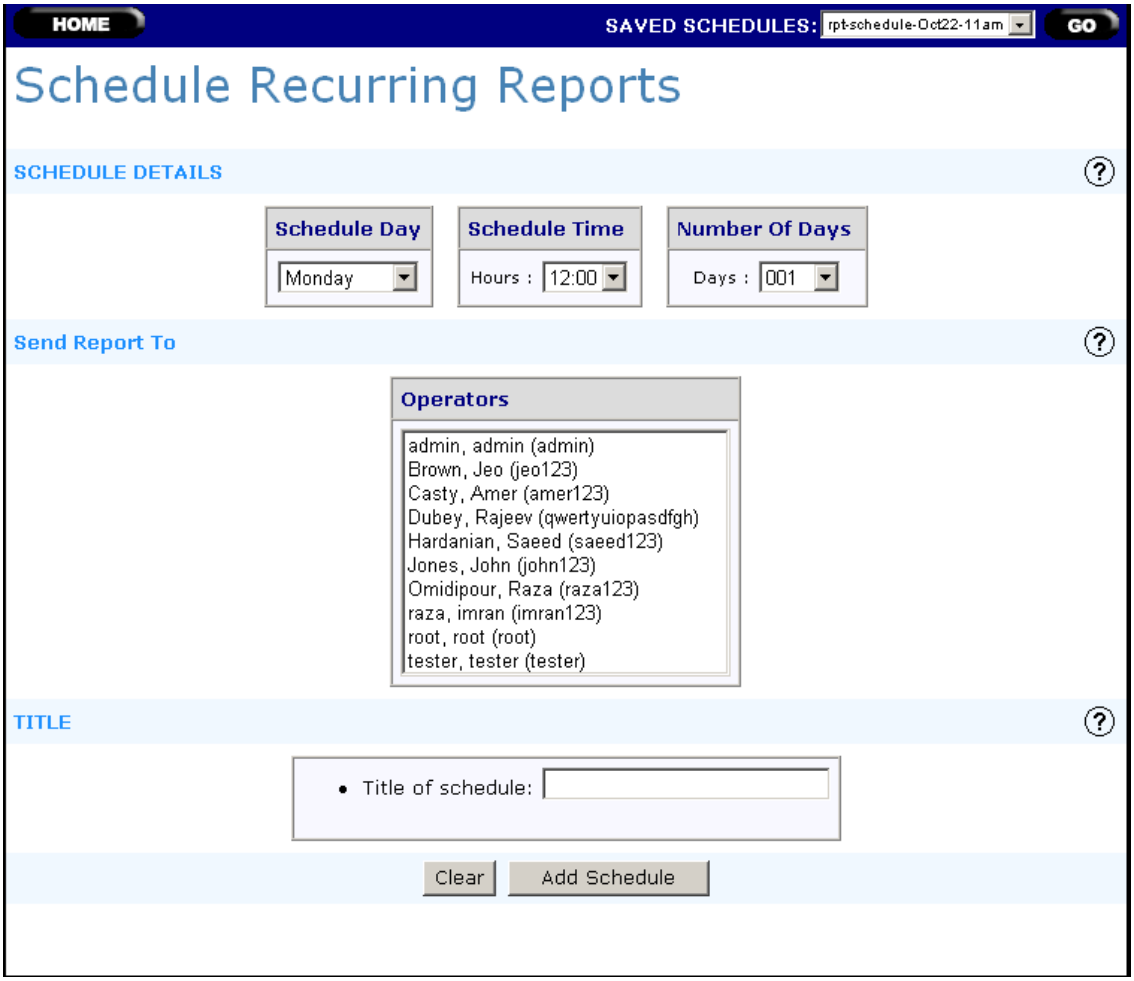
To save your query by giving it a name:

1. Type a name in the provided box in Options, etc. Once the report is created, its name is displayed next to Saved Queries.
2. Use the list box next to Saved Queries to retrieve saved reports, and choose the report you would like to see.
3. If at any time you have made an error while entering information and would like to clear the screen, click Clear at the bottom of the page and the information you have entered is cleared.

Recurring reports

Schedule reports allows you to create a report based on specific search criteria and then schedule the report to be sent to selected operators on a recurrent basis. The scheduled report will automatically be sent to those operators every week on the scheduled day and time. The reports are sent as a zipped .html file attachment.

Figure 28: Schedule Recurring Reports



To schedule a recurring report:

1. Enter the desired search criteria for the report, and instead of Create Report, click Schedule Report. The Schedule Recurring Reports page will appear.
2. Select the schedule day and schedule time that you want to send the report to selected operators.
3. Select the number of days that the report covers. For example, if you want data for the past 24 hours, select 1 and if you want data for the past week, select 7. The maximum number of days from which to include data is 365.
4. Go to the Send Report To section and select a list of operators to whom you want to send reports. Holding down the CTRL key, while clicking on submenu items, allows multiple selections within that submenu as well as the ability to deselect an item.

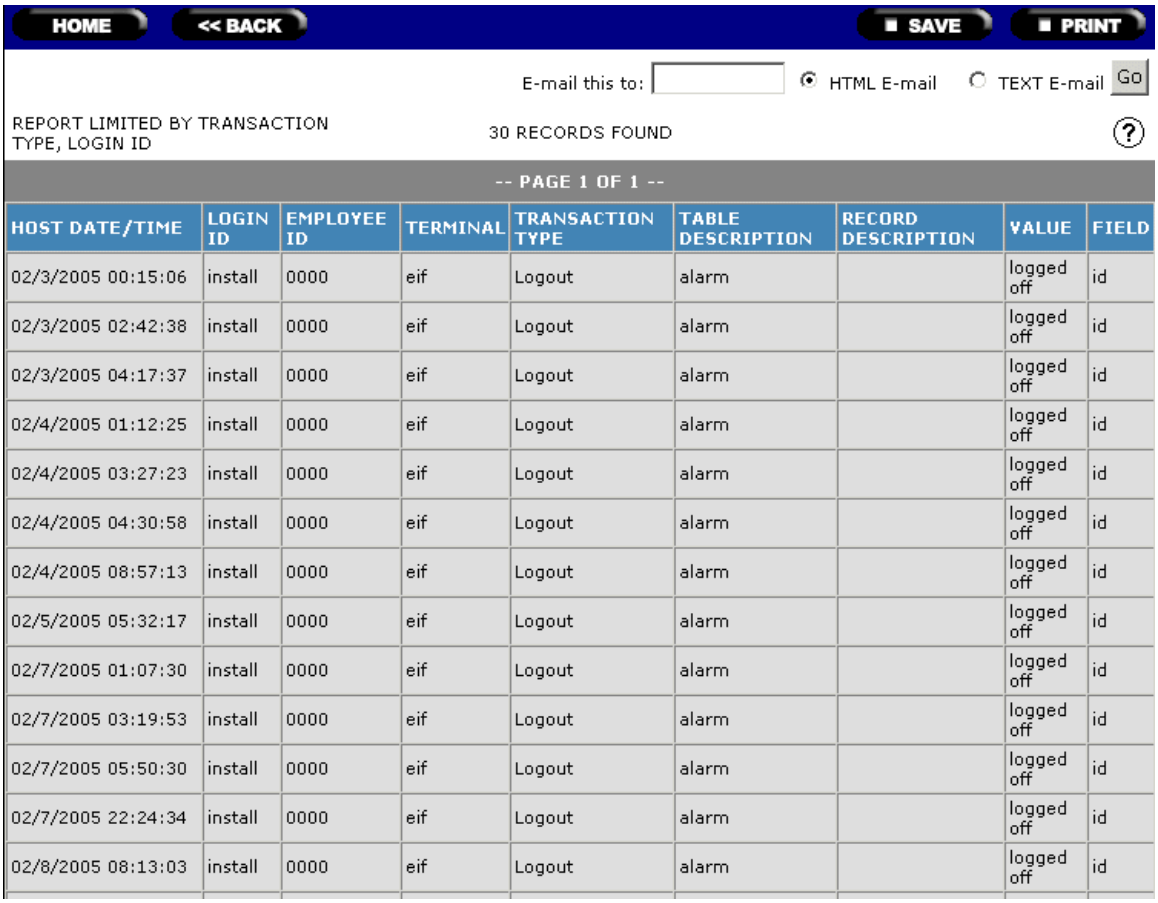
5. Enter the report title in the TITLE section and then click Add Schedule to add this schedule. Click Clear button to remove the selections.

   Note: A scheduled report cannot be saved if:

   - The title is left blank
   - Another scheduled report with the same title has been created by the same login.
   - Date option is selected

Operator history report page

Figure 29: Operator History Report



HOST DATE/TIME	LOGIN ID	EMPLOYEE ID	TERMINAL	TRANSACTION TYPE	TABLE DESCRIPTION	RECORD DESCRIPTION	VALUE	FIELD
02/3/2005 00:15:06	install	0000	eif	Logout	alarm		logged off	id
02/3/2005 02:42:38	install	0000	eif	Logout	alarm		logged off	id
02/3/2005 04:17:37	install	0000	eif	Logout	alarm		logged off	id
02/4/2005 01:12:25	install	0000	eif	Logout	alarm		logged off	id
02/4/2005 03:27:23	install	0000	eif	Logout	alarm		logged off	id
02/4/2005 04:30:58	install	0000	eif	Logout	alarm		logged off	id
02/4/2005 08:57:13	install	0000	eif	Logout	alarm		logged off	id
02/5/2005 05:32:17	install	0000	eif	Logout	alarm		logged off	id
02/7/2005 01:07:30	install	0000	eif	Logout	alarm		logged off	id
02/7/2005 03:19:53	install	0000	eif	Logout	alarm		logged off	id
02/7/2005 05:50:30	install	0000	eif	Logout	alarm		logged off	id
02/7/2005 22:24:34	install	0000	eif	Logout	alarm		logged off	id
02/8/2005 08:13:03	install	0000	eif	Logout	alarm		logged off	id

To navigate the generated report page:

1. The number of records that particular report contains is listed at the top of each report. If a report has multiple pages, you can move to the next page in the report by clicking Next.

2. Click End to move to the last page of the report.
3. Click Back to return to the query page that you used to create the report.
4. Click Home to return to the CARMA main page.

To print any of the above reports:

Note: The Print button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and, when the report displays, go to the top of the page on the right side and click Print.
2. Click Print to send the report to your local printer.
3. Click Back to return to the report page.

To save the reports:

Note: The Save button is enabled only if the number of records is greater than 0 and less than 10000.

1. Create the report and then when the report displays, go to the top of the page on the right side and click Save.

   The report is saved as a text file and may be imported into a desktop application. If you are using Microsoft Excel, the file is imported as a Microsoft Excel spreadsheet.

To e-mail any of above reports:

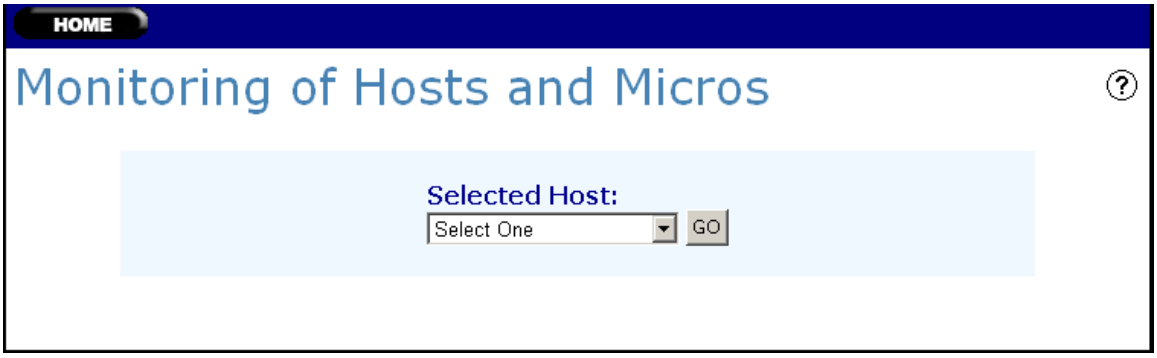
1. Create the report. When the report is on the screen, go to the top of the page on the right side and enter an e-mail address in the E-mail this to box.
2. Select the HTML option to send e-mail in HTML format or select TEXT to send in pipe delimited format. The file will be sent as a zipped attachment.
3. Click Go. A report will be sent to the specified e-mail address.

To obtain help with selected sections:

1. Along the right side of the Operator History page, the ?s (question marks) appear next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window.

Monitor hosts and micros

Figure 30: Monitoring of Hosts and Micros



To access the Monitor Hosts and Micros page:

1. Click Monitor Hosts and Micros on the main page of CARMA. This page displays explicit information about the hosts and micros running your card access system.

   After choosing Hosts and Monitors, a page is displayed that gives Selected Host and Monitor Information. Selected Host tells you the name of the host. If more than one host appears, select which host you would like to query against. Next to Monitor is a list box from which to choose.

2. Select the item (as described below) under the list box that you would like to see and click Go.

   - Host status. Select Host Status to retrieve the time of day, how many days the host has been up, how many users the host has, and the load average.
   - Host TCP Services. This tells you which services on the selected host are running and which are not. Some services, like SSH (Secure Socket Shell), may not be installed and should not be of concern if shown as not running.
   - Micro Status. This function provides the Micro status information for all of the micros on the current host/subhost. This is the same command as if running `mstate -qma` on the Picture Perfect host, except all information is kept on one scrolling screen.
   - Database Status. Select this to retrieve: the Informix database name, computer name, time of day, Informix version, Picture Perfect version, CPU utilization, ratio information, log information and checkpoint information.

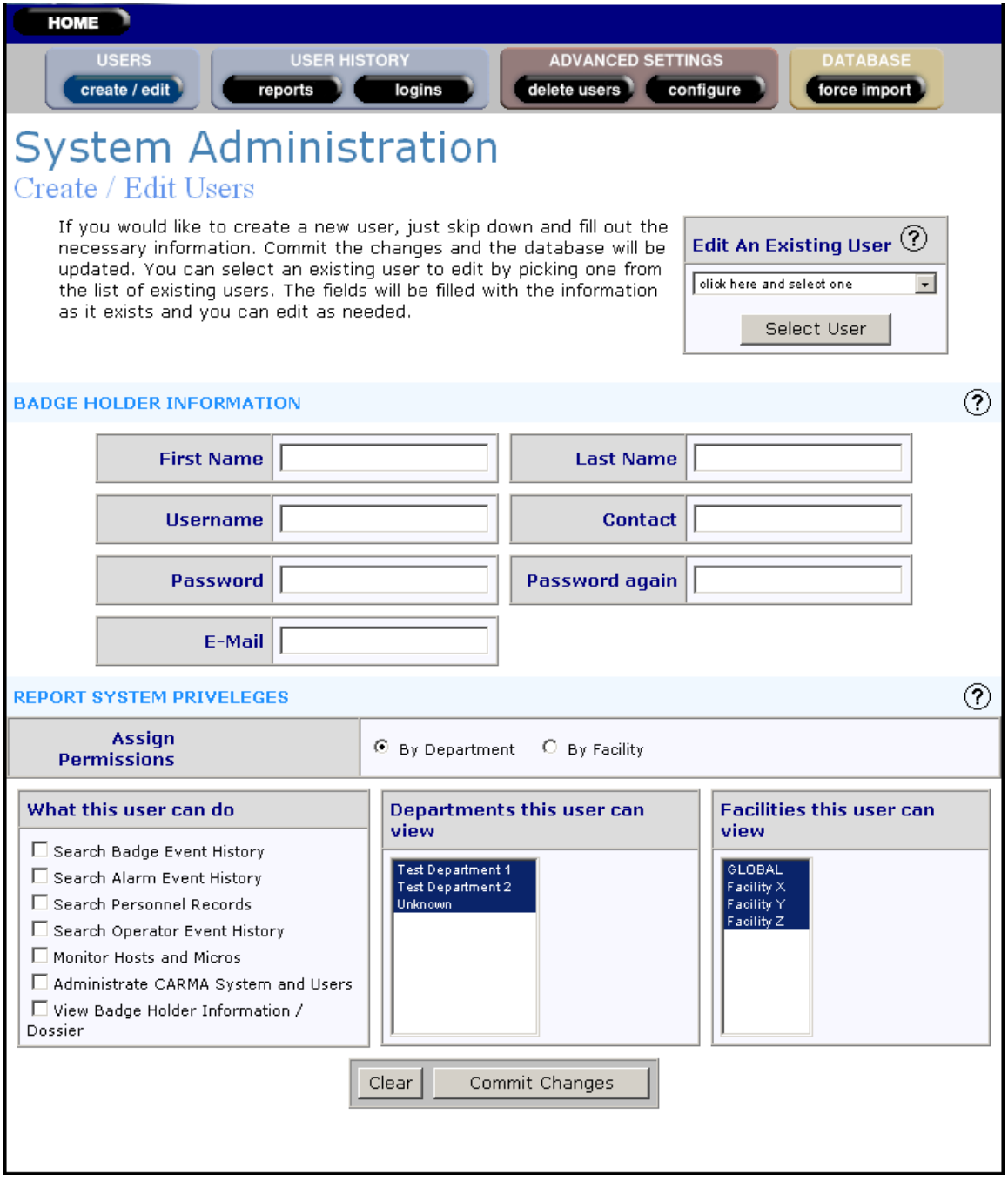
- Filesystem Statistics. This displays information about the disk usage of the computer.
- Memory and System Info. Selecting Memory and System Info reports the computer's system attributes. Specifically it reports the model name of the computer, the amount of usable memory, used memory, and unused memory (for AIX). This function operates slightly differently on the Unixware platform, only showing the shared memory statistics for Picture Perfect.
- Micro Firmware Versions. This displays the Rev # and Micro # of the computer host. This checks all online and communicating micros for the current firmware version in the micro. This report may take some time to complete, depending on the number of micros loaded on the host. This function is not currently supported for Unixware Picture Perfect hosts, but may be generated manually on the host itself using a shell prompt, if desired. Run `/cas/bin/checkmicros.sh` while logged in as `root`.

To obtain help with selected sections:

1. At the top of the right side of the Monitor Hosts and Micros page, the ?s (question marks) appear next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window.

System administration

Figure 31: Administration



To access the System Administration page:

1. Click System Administration on the CARMA Main Menu.

   This page allows for the administration of CARMA in several different ways. Different CARMA administration options can be found at the top of this page. These options are: USERS: create/edit, USER HISTORY: reports and logins, ADVANCED SETTINGS: delete users and configure, and DATABASE: force import.

2. Select the item (as described following) under the list box that you'd like to see.

To access the Create/Edit Users screen:

1. When you click System Administration on the CARMA main menu, the Create/Edit Users screen is automatically displayed without having to actually select it from the options listed at the top of the page.
2. In the box to the right of the heading Create/Edit Users, you will find a place to Edit an Existing User. Use the list box to pick the user that you would like to edit.
3. After you select the user, click Select User under the list box. This displays that particular user's file. You can then make changes to the file. Type information in the Badge Holder Information section, or click or clear selections in the Report System Privileges section.
4. After you have made the appropriate changes, click Commit Changes at the bottom of the page. The next window confirms that the user file has been updated. From here you can edit another existing user by following the same steps.
5. You can also enter information for a new user on the Create/Edit Users page. Rather than displaying an existing user with the list box, start entering the new user's information under Badge Holder Information and Report System Privileges. The password entered in under the Badge Holder Information section must be eight characters long.
6. You can limit the records an operator can view by either department or facility. To view more than one department or facility, you must hold down the SHIFT key when making additional selections. After you are done entering in all appropriate information, click Commit Changes at the bottom of the page. The next screen confirms that you have entered in the information correctly.
7. If at any time you have made an error while entering information, and would like to clear the screen, click Clear at the bottom of the page and the information you have entered is cleared.

To obtain help with selected sections:

1. Note at the top of the right side of the Create/Edit Users page the ?s (question marks) next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window at the bottom of the window or the x in the upper right side of the window.

To access the Search User Queries screen:

1. Note the next button at the top of the System Administration page is User History: reports.
2. Click this button to display a window entitled Search User Queries. This report lists specific queries a user has requested during a certain time frame. All SQL queries generated by users on the CARMA system are saved for at least 90 days, and you can review those SQL queries using this report.
3. Choose the specific dates you want in the Date Query Was Run section. You can also choose specific times in this same section if you would like to narrow the search down further. In the second section on this page entitled User Who Ran the Query, pick the CARMA user on which you would like to generate the report.
4. At the very bottom of the Search User Queries page is a box entitled Options, etc. Here you can choose whether you would like the report to list the badge events with the latest events first (default) or the earliest events first. However, if you would like the report to list the earliest events first click the arrow of the list box and choose Earliest.
5. Also found in this Options, etc. box is the option to delete logs older than 90 days. To do this, click Clicking Here. A new page lists the number of logs found in the SQL Log History and the number of outdated rows that were found and deleted. Click Back to return to the Search User Queries page.
6. If at any time you have made an error while entering information and would like to clear the screen, click Clear at the bottom of the page and the information you have entered is cleared. Click Create Report when the information you have entered is correct.
7. At the top of this report the number of records shown is listed. You move through this report by clicking **Next** for the next page, End for the end of the report, Back for the previous page and Start for the beginning of the report.
8. Click the column header in the report to sort opposite of how the report is already sorted.

For example, if the report is sorted latest events first, click Date and it will be resorted with the earliest events first.

Another example: if you would like the report to be sorted in alphabetical order by name, instead of sorting by date, click the Name column.

To obtain help with selected sections:

1. Note along the right side of the Search User Queries page the ?s (question marks) next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window at the bottom of the window or the x in the upper right side of the window.

To access the Search System Logins screen:

1. Note the next button at the top of the System Administration screen is USER HISTORY: logins.
2. Click this button to display a page entitled Search System Logins. You can review both successful and unsuccessful logins here. All logins made to the CARMA system are logged for at least 90 days.
3. Choose a date and/or time by using the list boxes in the first section of this page entitled Date Login Was Made Or Attempted. Then click Create Report.
4. If you would also like to choose a specific CARMA User along with a date and/or time on which to generate the report, do this in the section entitled User Who Logged In. You can also choose only successful or unsuccessful logins in this same section by clicking on one or the other in the box entitled Limit Search To. If you do not choose either of these, all logins, successful and unsuccessful, will show on the report.
5. At the very bottom of the Search System Logins page is a box entitled Options, etc. Here you can choose whether you would like the report to list the badge events with the latest events first (default) or the earliest events first. However, if you would like the report to list the earliest events first, click the arrow of the list box and choose Earliest.

   Also found in the Options, etc. box is the option to delete logs older than 90 days. To do this, click Clicking Here. A new page lists the number of logs found in the SQL Log History and the number of outdated rows that were found and deleted. Click Back to get to the Search System Logins page.
6. If at any time you have made an error while entering information and would like to clear the screen, click Clear at the bottom of the page and the

information you have entered is cleared. Click Create Report when the information you have entered is correct.

7. At the top of this report, the number of records shown is listed. You move through this report by clicking Next for the next page, End for the end of the report, Back for the previous page, and Start for the beginning of the report.
8. Click the column header in the report to sort opposite of how the report is already sorted. For example, if the report is sorted latest events first, click Date and it will be resorted with the earliest events first.

   Another example: if you would like for the report to be sorted in alphabetical order by name, instead of sorting by date, click the Name column.
9. On the report page, you can sort the report by clicking the column headers. Click a column header in the report to sort opposite of how the report is already sorted.

   For example, if the report is sorted latest events first, click Date and it will be resorted with the earliest events first. Click Date again and the report returns to being sorted with the latest events first.

   Another example: if you would like the report to be sorted in alphabetical order by name, instead of sorting by date, click the Name column and this will happen. Click Date and the report returns to sorting by date.

To obtain help with selected sections:

1. Note at the top of the right side of the Search System Logins page the ?s (question marks) next to each section.
2. Click the ? and a window displays information pertaining to the selected section.
3. Click Close to close this window at the bottom of the window or the x in the upper right side of the window.

To access the Delete Users screen:

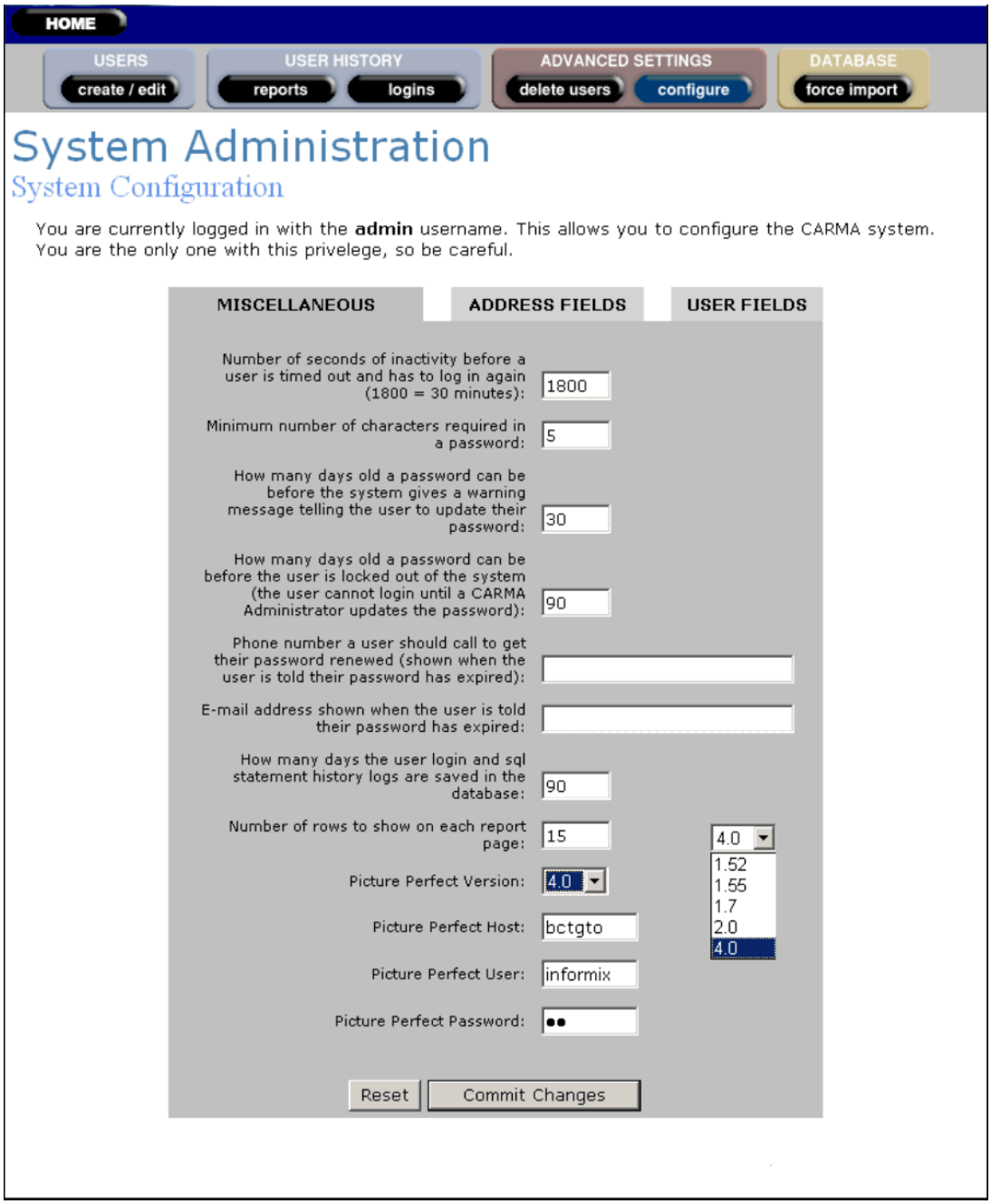
The next button at the top of the System Administration screen is ADVANCED SETTINGS: delete users. Click this to display a page entitled Delete Users. This function allows you to permanently delete a CARMA user from the system. Choose the user to be deleted, and click Delete this User. If a user is deleted after a schedule is created, the schedule is updated so that no mail is generated to the deleted user.

To access the System Configuration screen:

The next button at the top of the System Administration screen is ADVANCED SETTINGS: configure. Click this to display a page entitled System Configuration.

This screen is used to configure the operating parameters of the CARMA application itself. The item options have explanations for each field, and should be changed to match your specific needs.

Figure 32: System Configuration


HOME
USERS
create / edit
USER HISTORY
reports
logins
ADVANCED SETTINGS
delete users
configure
DATABASE
force import
System Administration
System Configuration
You are currently logged in with the admin username. This allows you to configure the CARMA system.
You are the only one with this privelege, so be careful.
MISCELLANEOUS
ADDRESS FIELDS
USER FIELDS
Number of seconds of inactivity before a user is timed out and has to log in again (1800 = 30 minutes):
1800
Minimum number of characters required in a password:
5
How many days old a password can be before the system gives a warning message telling the user to update their password:
30
How many days old a password can be before the user is locked out of the system (the user cannot login until a CARMA Administrator updates the password):
90
Phone number a user should call to get their password renewed (shown when the user is told their password has expired):
E-mail address shown when the user is told their password has expired:
How many days the user login and sql statement history logs are saved in the database:
90
Number of rows to show on each report page:
15
Picture Perfect Version:
4.0
1.52
1.55
1.7
2.0
4.0
Picture Perfect Host:
bctgto
Picture Perfect User:
informix
Picture Perfect Password:
Reset
Commit Changes

To access the DATABASE: force import option:

1. The next function at the top of the System Administration screen is DATABASE: force import. Click this and a warning statement is displayed.

   Caution: The database import operation is intended for manual import operations when the normal scheduled database import did not work, or you need to generate it manually for some reason.

   The preferred method for the Picture Perfect database import is using the CRON scheduler, which is set by default upon installation. If you still need to run this database import operation, be aware that on large systems this could take several hours. On smaller systems it should take less than 30 minutes.

   Do not run multiple instances of this import, as you can severely slow down the system performance.

2. Click Import at the bottom of the screen to generate this database import operation.

Chapter 6
Secure socket layer

Summary

This chapter covers the following topics:

- Obtaining a Certificate for the CARMA Server
- Generating and Installing the Certificate

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Proof of right to use domain name 113
Letter of authorization 114
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Introduction

In various personal and business situations we are often asked to identify ourselves by using a trusted certificate such as a passport, ID card, or driver's license. The same is true in the world of data communications.

The emergence of Certificate Technologies and Certificate Authorities (CAs) addresses concerns in this area. A certificate is an electronic form of ID used to identify the holder. Certificates are issued by CAs, whose role is to issue and manage certificates and vouch for the certificate holder.

The type of certificate used in CARMA is an X.509 Server Certificate. A Server Certificate is issued by a CA for a particular server (Distinguished Name) and contains the server's Public Key, the owner's organization name, expiry information, and the signature of the issuing body (the CA). When presented to an application, the digital signature is verified by examining the CA signature using the Public Key of the CA, which is built in to the requesting client application. Clients can then check that they are connecting to the expected server, and not to an impostor inserting itself in the communication stream.

The Secure Sockets Layer (SSL) is a protocol, developed by Netscape Communications Corporation, which establishes a secure connection between a client and server using the technologies described above. The actual encryption algorithm used is developed and licensed by RSA (named after its inventors, Ron Rivest, Adi Shamir and Leonard Adleman). RSA is the only universally accepted Cryptosystem.

Obtaining a certificate for the CARMA server

In order to obtain a certificate from a trusted Certificate Authority (CA) you will need to generate a Certificate Signing Request (CSR) that uniquely identifies your server to the CA.

There are a number of certificate authorities that will issue a certificate for your server. The most well known and trusted ones are:

- Verisign (http://www.verisign.com) and
- Thawte Consulting (http://www.thawte.com)

Many organizations generate their own certificates for servers such as this, which are only used for internal use and do not require the recognized and trusted name of a CA. If your organization generates its own certificates, then you must still follow the same steps to set up SSL, only you will present your CSR to your internal organization instead of one of the above mentioned CAs.

In order to obtain a Certificate from a CA, you will need to provide the CA with the following:

- Proof of organization name
- Proof of right to use domain name
- Letter of Authorization
- The Certificate Signing Request (CSR)

Proof of organization name

Companies, Corporations, Incorporations

You will need a copy of your official company registration documents or certificate of incorporation in your state or country. CAs are generally very strict about this, and will not waive these requirements.

Partnerships

You should be registered with national, state, or local authorities. You will need to provide a copy of some form of verifiable proof of the partnership name.

Proprietorships and DBAs

If you are a sole proprietor or DBA (Doing Business As), you will need a copy of your DBA registration papers for local levies and taxes. Any official correspondence indicating your right to use the name given on your request will generally be sufficient, as long as the CA can verify it with the relevant authority.

Proof of right to use domain name

Generally you will not need proof if your domain is registered to your company exactly as it is in your CSR. If you will not be using the CARMA server on the Internet, you probably will not need this.

If your domain is registered to a person, the CA will generally require a letter authorizing your organization to use the domain for business purposes from the person to whom the domain is registered.

If you are a subdivision of the company who owns the domain, the CA will require a letter proving this.

If your domain is registered to a company and you have subsequently changed the organization name in any way, the CA will need supporting documentation.

Letter of authorization

You will need a signed letter from a high-ranking individual in the organization authorizing the use of a Certificate to authenticate the company during secure online communications. This letter must be printed on the organization's letterhead. This is required to prevent unauthorized individuals within an organization from creating an authenticated electronic presence for the organization without proper clearance. The letter needs to establish that the organization’s decision-makers have agreed to the use of a Certificate, and must be signed by the decision-maker and not by a third party. The letter may also be required to authorize a credit card charge to cover the cost of the certificate.

The certificate signing request (CSR)

A CSR is a block of encrypted code generated by your server, which contains the unique information about your server that is necessary for the CA to generate your certificate. Once you obtain your certificate you will need to install it on your server before you can use the SSL feature.

Generating the CSR and installing the certificate

To generate the CSR and install the certificate:

1. Log on as `root`.

   A # prompt displays.

2. Change to appropriate directory by typing the following:

   ```
   cd /etc/httpd/conf [Enter]
   ```

3. Generate the CSR by typing the following:

   ```
   openssl req -new -key ssl.key/server.key >
   ssl.csr/server.csr [Enter]
   ```

   Messages similar to the following will appear on the screen:

   ```
   Using configuration from /usr/lib/openssl.cnf
   ```

   ```
   You are about to be asked to enter information that will
   be incorporated into your certificate request. What you
   are about to enter is what is called a Distinguished Name
   or a DN. There are quite a few fields but you can leave
   ```

```
some blank. For some fields there will be a default
value. If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [US]:

State or Province Name []:FL

City (Locality) Name []:Boca Raton

Company (Organization) Name
[]:UTC

Department Name []:Marketing

Server Host Name []:carma.utcfireandsecurity.com

Server Administrators Email Address
[]:zev.Freidus@utcfireandsecurity.com

Please enter the following 'extra' attributes to be sent
with your certificate request

A challenge password []:xxxxxxxx

An optional company name []:

NOTE: Be sure that you enter in the “Server Host Name”
field the exact name of your CARMA server. If you will be
accessing your server using the Fully Qualified Domain
Name then it must be entered this way in the CSR. For
example if your server name is “carma” and you will be
accessing it using a URL such as
carma.utcfireandsecurity.com then you must enter
carma.utcfireandsecurity.com in the Server Host Name
field. If this information is entered incorrectly, SSL
will not function properly and this information can NOT
be changed once you get your Certificate.
```

4. Change directories by typing the following:

   ```
   cd /etc/httpd/conf/ssl.csr [Enter]
   ```

   There will be a file in this directory called server.csr. This is your CSR.

5. Present your CSR to a CA along with the other relevant information to receive your Certificate.

6. Once you receive your Certificate copy it to the following location:

   ```
   /etc/httpd/conf/ssl.crt/server.crt
   ```

7. Restart your CARMA Web server by typing the following:

```
/etc/init.d/httpd restart [Enter]
```

Messages similar to the following will appear on your screen:

```
Shutting down http:  [OK]
Starting httpd:  [OK]
```

You are now ready to begin using SSL with your CARMA Web server. To access the server using SSL, simply prefix your URL with https instead of the standard http.

Appendix A
Advanced configuration

Summary

This appendix covers the following topics:

- Shutting Down and Rebooting the CARMA server
- Verifying that mySQL is Running
- Resetting the CARMA Database
- Manually Running the Sweeper Program
- If You are Unable to Connect to the Picture Perfect Database
- Turning on Verbose Mode
- Turning on Error Logging
- Changing the Sweeper Schedule
- Changing Parameters Supplied During Installation
- Backing up the Database
- Restoring the Database
- Verifying the Daily Import
- Viewing System Information
- Enabling Access Search Feature

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Introduction

This appendix contains a collection of application notes outlining various procedures that may be useful to the CARMA system administrator in troubleshooting and/or making advanced configuration changes. It is intended for individuals who have prior UNIX Systems Administration experience. All others should call UTC Fire & Security technical support for assistance.

Shutting down and rebooting the CARMA server

To shut down and reboot the CARMA server:

1. Log on as root, and then type:

   ```
   reboot [Enter]
   ```

To shut down the computer so it can be powered off:

1. Log on as root, and then type:

   ```
   halt [Enter]
   ```

Verifying that mySQL is running

To verify that mySQL is running.

1. Log on as root, and then type:

   ```
   mysyqladmin proc status [Enter]
   ```

   Messages similar to the following will be displayed on your screen:

   ```
   mysqladmin proc status
   Id    User    Host      db  Command      Time    State    Info
   |
   73    root    localhost     Query        0
   showprocesslist

   Uptime: 143331  Threads: 1  Questions: 72715  Slow queries: 12
   Opens: 352 Flush tables: 5  Open tables:
   3 Queries per second avg: 0.507
   ```

Note that the uptime reported is the number of seconds the server has been running since the last reboot.

Resetting the CARMA database

To reset the CARMA database:

1. Type:

   ```
   /usr/local/carma/resetdb.sh [Enter]
   ```

This resets the CARMA database to its default settings. The next time the Sweeper runs it will rebuild the database from the Picture Perfect database. However, any history no longer on the Picture Perfect host will no longer be available through CARMA. Additionally, any CARMA operators you have defined will need to be recreated.

Manually running the Sweeper program

To manually run the Sweeper program:

1. Type:

   ```
   /etc/cron.daily/carma.cron [Enter]
   ```

Executing this command will run the Sweeper. It is automatically run every night with the cron schedule, but you may run it manually. Depending on your database size, this could take a while to complete.

Note: A database with less than a 100,000 records will generally transfer in about 30 minutes. A database with two million records will generally transfer in about five hours. Network configuration and traffic will also affect transfer time, therefore, individual results may vary.

During this time you will not see any activity on the screen, although the transfer is taking place.

Caution: Do NOT interrupt the Sweeper while in progress, and do NOT run multiple instances simultaneously.

You may also manually run the Sweeper by logging in over the browser as the system administrator and clicking on System Administration and then on the Database Import tab on the top of the screen.

If you are unable to connect to the Picture Perfect database

If you are unable to connect to the Picture Perfect Database:

1. Type:

   `ping pphost [Enter]`

   Where pphost is the name of the Picture Perfect host. If you receive no answer from the host, check your `/etc/hosts` file for an entry for the Picture Perfect host and make sure it is correct. Also, check to ensure that your network is properly configured and connected.

   If you are able to ping the Picture Perfect host, and the import program takes an unusually long period of time to respond with an error message, it is probably timing out waiting for a response from the Informix database. The most likely cause for this is that the database is not running. If Picture Perfect is not running, start Picture Perfect to bring up the database. For more information on starting and stopping Picture Perfect and Informix please see the *Picture Perfect Administration Guide*.

2. For troubleshooting purposes, you may find it necessary to turn on verbose so you can see activity of the import as it happens. To do so please see "Turning on verbose mode" on page 122. Once this is enabled, manually run the import program again (see "Manually running the Sweeper program" on page 120).

3. You may also want to enable error logging. To do so, please "Turning on error logging" on page 122. Once this is enabled, manually run the import program again ("Manually running the Sweeper program" on page 120), and then check the error log.

4. If you receive Informix error messages (these usually consist of a dash (-) followed by a number) when trying to connect, it may help to refer to the Informix error descriptions which can be found at:

   `http://www.informix.com/answers/english/ierrors.htm`

5. Another tool you can use to test the connection to the Picture Perfect system is:

   `/usr/local/carma/test [Enter]`

   Using this will prompt you for a Picture Perfect hostname, a username, password, and database name. When prompted for the database name, enter, `proteus`. Supply the parameters you wish to use for the connection to Picture Perfect. The test program will then attempt to connect to the server

and the database. The results will be displayed on the screen and logged in your CARMA error log file.

Configuring CARMA for a Picture Perfect redundant system

To configure CARMA for a Picture Perfect Redundant system:

1. Edit the `/etc/carma.conf` file as follows:

   Locate the following line:

   `REDUNDANT=0`

   Change it to:

   `REDUNDANT=1`

Turning on verbose mode

To enable verbose mode:

1. Edit the `/etc/carma.conf` file as follows:

   Locate the following line:

   `SHOW_PROGRESS=0`

   Change it to:

   `SHOW_PROGRESS=1`

Turning on error logging

To enable error logging:

1. Open the `/etc/carma.conf` file.
2. Locate the following line:

   `CARMA_LOGFILE=/tmp/carma.log`

   This shows the location of the log file. It is set by default to `/tmp/carma.log`.

3. Open the log file and edit it as follows:

   Locate the following line:

   `KEEP_ERRORLOG=0`

   Change it to:

   `KEEP_ERRORLOG=1`

Changing the sweeper schedule

The Sweeper is scheduled using Cron, the built-in schedule mechanism of the Linux Operating System. In Red Hat Linux, it is somewhat easier to set up Cron jobs than in other distributions of UNIX. The Cron utility automatically executes items in several subdirectories at regular periods as follows:

- `/etc/cron.hourly/`
- `/etc/cron.daily/`
- `/etc/cron.weekly/`
- `/etc/cron.monthly/`

In the daily cron directory (`/etc/cron.daily/`) there is a symbolic link to a script called carma.cron. This is the script that does the import. By default, the import runs once a day at 4:02 A.M., local time. If you move this link from this location, it will no longer run on a daily basis. If for example you placed it in the `/etc/cron.weekly/` directory, then it would run on a weekly schedule.

Alternatively, you can move the link outside of the automatic execution directories and schedule its execution using the traditional user-level crontab utility. For more information on using crontab please see the Red Hat online documentation at:
http://www.redhat.com/support/docs/tips/cron/cron.html

Note: The actual location of the script is:
`/usr/local/carma/carma.cron`

Changing the parameters supplied during installation

The easiest way to change the parameters during installation is to remove the CARMA application and reinstall it. This can be done without removing the mySQL database and therefore your accumulated Picture Perfect data will *not* be lost. To remove the CARMA application, please refer “Removing CARMA” on page 58.

To change the name of the Picture Perfect Host without reinstalling CARMA:

1. Edit the `/etc/hosts` file to reflect the new name and/or address of the Picture Perfect host.

   Edit the following files to reflect the new Picture Perfect hostname.

   Example 1 as shown in Figure 33 on page 125:

   `/etc/carma.conf`

   Example 2 as shown in Figure 34 on page 125:

   `/opt/informix/etc/sqlhosts`

2. Log on to CARMA as the System Administrator. Click System Administration, then Configure, and supply the updated information.

To change the Picture Perfect user that CARMA should use to connect to the Picture Perfect database, without reinstalling CARMA:

1. Edit the following files to reflect the Informix user identification (`informix_username`) and password (`informix_password`) that you wish to use:

   `/etc/carma.conf`
   (see Example 1)

   `/opt/informix/etc/sqlhosts`
   (see Example 2)

2. You will now need to change the user name that CARMA should use when authenticating real time status information:

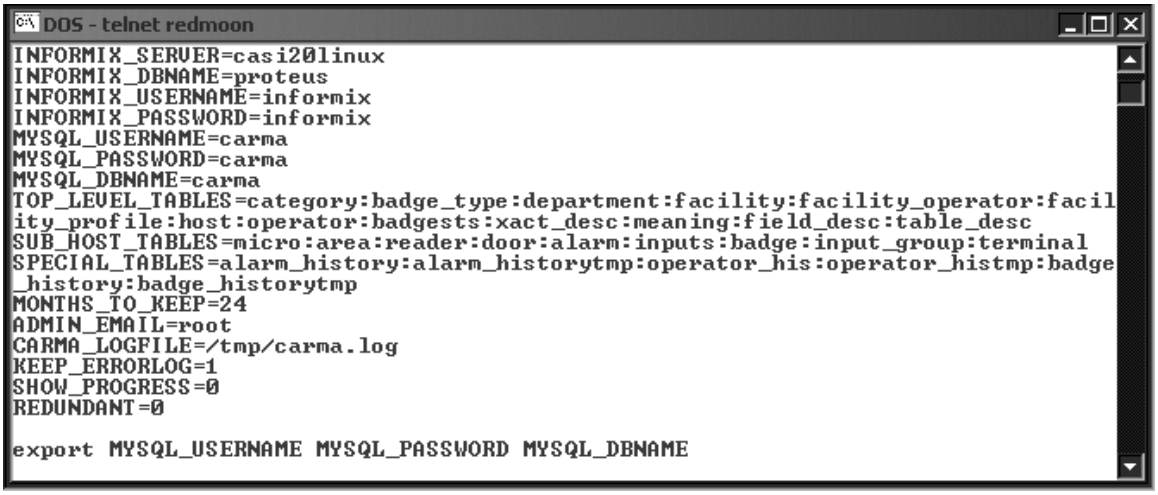
3. Log on to CARMA as the System Administrator. Click System Administration, then Configure, and supply the updated information.

4. Rerun the Picture Perfect host installation script, as described in “Installing CARMA” on page 3.21, supplying the new user information when prompted.

Example 1

`/etc/carma.conf`

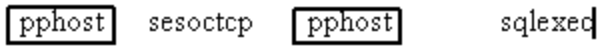
Figure 33: Example: carma.conf



Example 2

`/opt/informix/etc/sqlhosts`

Figure 34: Example /opt/informix/etc/sqlhosts



Backing up the database

All of the mySQL database tables are stored in the `/var filesystem.`

To back up the database to tape:

1. Log on as `root`.
2. Create a disk file for your database backup. Type:

   Linux V ES
   ```
   mysqldump --opt carma > /var/<filename> [Enter]
   ```

   Linux V7.1 Enterprise 3
   ```
   mysqldump -u carma -p --opt carma > /var/<filename>
   [Enter]
   ```

   Where <filename> is the name of the backup file. For example: carmabk101003.
3. Insert a tape and type:

   ```
   tar -cvf/dev/st0 /var/<filename> [Enter]
   ```

Restoring the database

Caution: Restoring your database overwrites the current database.

Should the need arise to rebuild your CARMA server (for example: disk failure):

1. Follow the instructions for loading Linux and the CARMA software in this manual.
2. To restore your database, insert your `/var` backup tape.
3. Log on as `root`.
4. Type:

   ```
   cd /var [Enter]
   ```

   ```
   tar -xvf /dev/st0 [Enter]
   ```

   Linux V7.3
   ```
   mysql -u carma -p -e
   "source /var/<filename>" carma [Enter]
   ```

   Where <filename> is the name of the backup file. For example: carmabk101003.

Verifying the daily import

To check that the daily import was successful:

1. Type:

   ```
   cd /tmp
   ```

   ```
   cat carma.log
   ```

   Messages similar to the following will be displayed:

   ```
   [root@carma tmp]# cat carma.log
   We're > 1.52 (for plevel)
   Start time was Thu Mar  7 04:02:02 2002
   ```

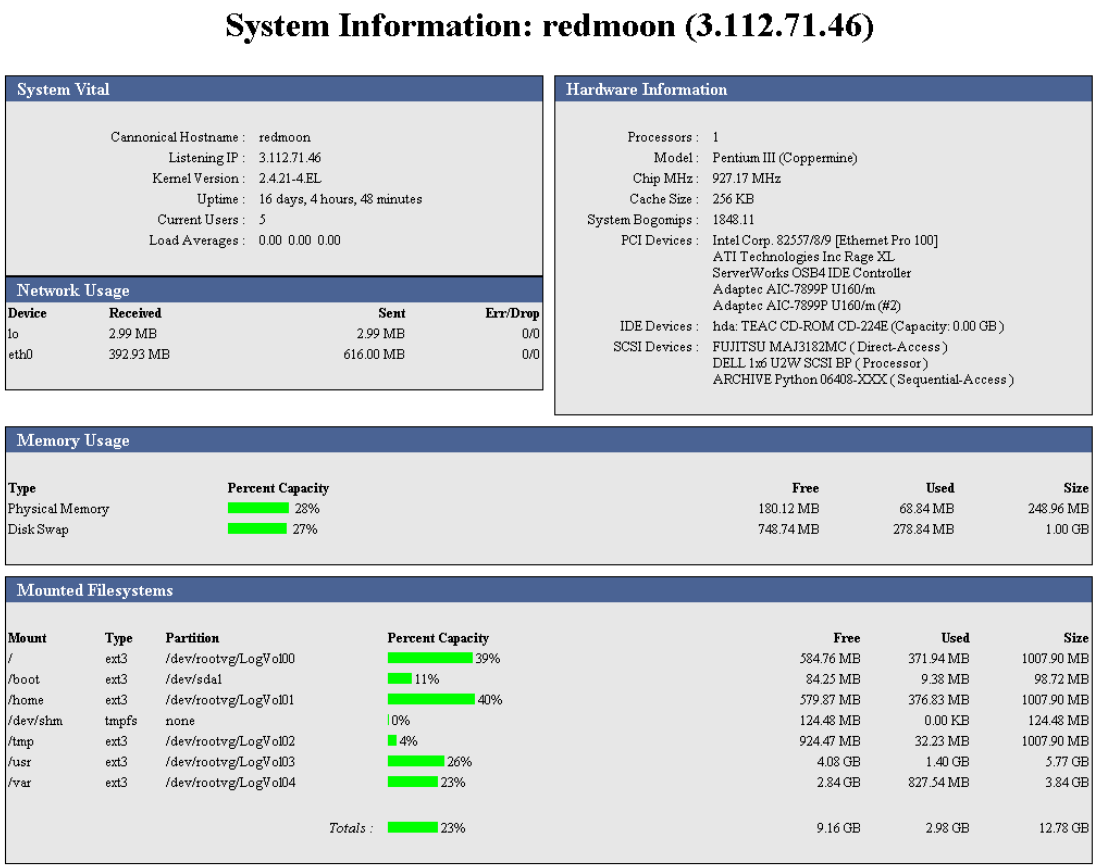
   ```
   Data Transfer took 8.73333 minutes!
   That's 67 records / second!
   Indexing Took 3.3 minutes!
   Total Time 12.0333 minutes!
   ```

Viewing system information

To view CARMA server statistics:

1. Point your browser to:
   http://<CARMA server name>/phpSysInfo/index.php

Figure 35: System Information



System Information: redmoon (3.112.71.46)

System Vital

Cannonical Hostname :	redmoon
Listening IP :	3.112.71.46
Kernel Version :	2.4.21-4.EL
Uptime :	16 days, 4 hours, 48 minutes
Current Users :	5
Load Averages :	0.00 0.00 0.00

Network Usage

Device	Received	Sent	Err/Drop
lo	2.99 MB	2.99 MB	0/0
eth0	392.93 MB	616.00 MB	0/0

Hardware Information

Processors :	1
Model :	Pentium III (Coppermine)
Chip MHz :	927.17 MHz
Cache Size :	256 KB
System Bogomips :	1848.11
PCI Devices :	Intel Corp. 82557/8/9 [Ethernet Pro 100] ATI Technologies Inc Rage XL ServerWorks OSB4 IDE Controller Adaptec AIC-7899P U160/m Adaptec AIC-7899P U160/m (#2)
IDE Devices :	hda: TEAC CD-ROM CD-224E (Capacity: 0.00 GB)
SCSI Devices :	FUJITSU MAJ3182MC (Direct-Access) DELL 1x6 U2W SCSI BP (Processor) ARCHIVE Python 06408-XXX (Sequential-Access)

Memory Usage

Type	Percent Capacity	Free	Used	Size
Physical Memory	28%	180.12 MB	68.84 MB	248.96 MB
Disk Swap	27%	748.74 MB	278.84 MB	1.00 GB

Mounted Filesystems

Mount	Type	Partition	Percent Capacity	Free	Used	Size
/	ext3	/dev/rootvg/LogVol00	39%	584.76 MB	371.94 MB	1007.90 MB
/boot	ext3	/dev/sda1	11%	84.25 MB	9.38 MB	98.72 MB
/home	ext3	/dev/rootvg/LogVol01	40%	579.87 MB	376.83 MB	1007.90 MB
/dev/shm	tmpfs	none	0%	124.48 MB	0.00 KB	124.48 MB
/tmp	ext3	/dev/rootvg/LogVol02	4%	924.47 MB	32.23 MB	1007.90 MB
/usr	ext3	/dev/rootvg/LogVol03	26%	4.08 GB	1.40 GB	5.77 GB
/var	ext3	/dev/rootvg/LogVol04	23%	2.84 GB	827.54 MB	3.84 GB
		Totals :	23%	9.16 GB	2.98 GB	12.78 GB

Access Search Feature

The Access Search feature allows you to obtain information regarding which card access system badge holder has access to which doors. For example, you can use this feature to generate a report of the employee badges that have access to specific readers, areas, or categories. The report can be saved, and then printed or e-mailed.

Caution: The Access Search feature involves the process of joining tables, which is memory and time intensive. Enabling the Access Search feature can lead to performance issues.

The Access Search feature is not enabled by default, so you must manually enable it on your CARMA server. Once enabled, the Access Search feature displays as an option on the CARMA client computer home page.

To enable the Access Search feature:

1. On the CARMA server operating system command line, type the following command (if not using the VI editor, enter the appropriate command):

   `vi /etc/carma.conf`

2. Find the statement `IGNORE_CARMA_ACCESS = 1` and reset it to `IGNORE_CARMA_ACCESS = 0` using the editor.
3. Save the new changes, and then exit the editor.

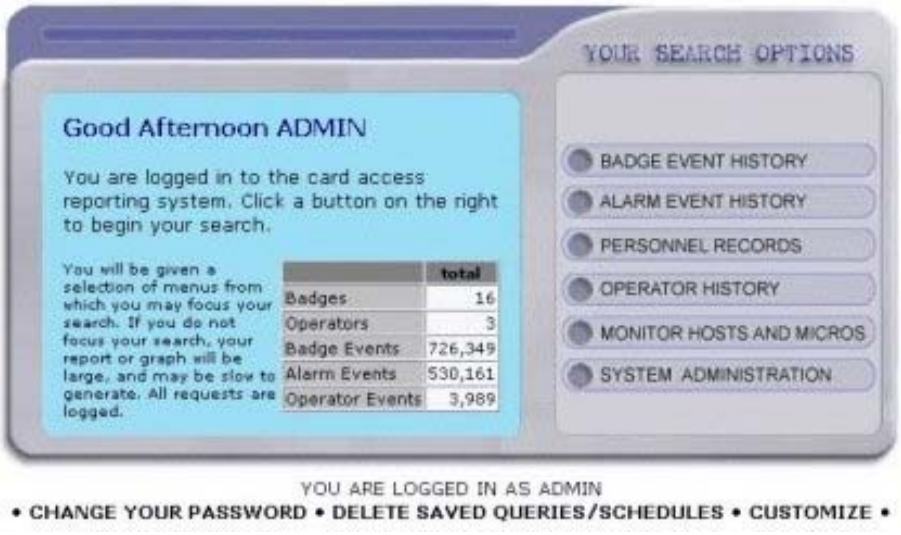
   The Access Search feature is now available on the home page.

Description of Access Search features

To open the Access Search feature:

1. On the CARMA server operating system command line, type the following command (if not using the VI editor, enter the appropriate command):
2. On the CARMA server operating system command line, type the following command (if not using the VI editor, enter the appropriate command):
3. Log on to CARMA.
4. On the home page, click ACCESS SEARCH to open the Access Search page.

Figure 36: Access Search Feature


YOUR SEARCH OPTIONS
Good Afternoon ADMIN
You are logged in to the card access reporting system. Click a button on the right to begin your search.
You will be given a selection of menus from which you may focus your search. If you do not focus your search, your report or graph will be large, and may be slow to generate. All requests are logged.
total
Badges 16
Operators 3
Badge Events 726,349
Alarm Events 530,161
Operator Events 3,989
BADGE EVENT HISTORY
ALARM EVENT HISTORY
PERSONNEL RECORDS
OPERATOR HISTORY
MONITOR HOSTS AND MICROS
SYSTEM ADMINISTRATION
YOU ARE LOGGED IN AS ADMIN
• CHANGE YOUR PASSWORD • DELETE SAVED QUERIES/SCHEDULES • CUSTOMIZE •

Access Search page description

The Access Search page is comprised of three sections:

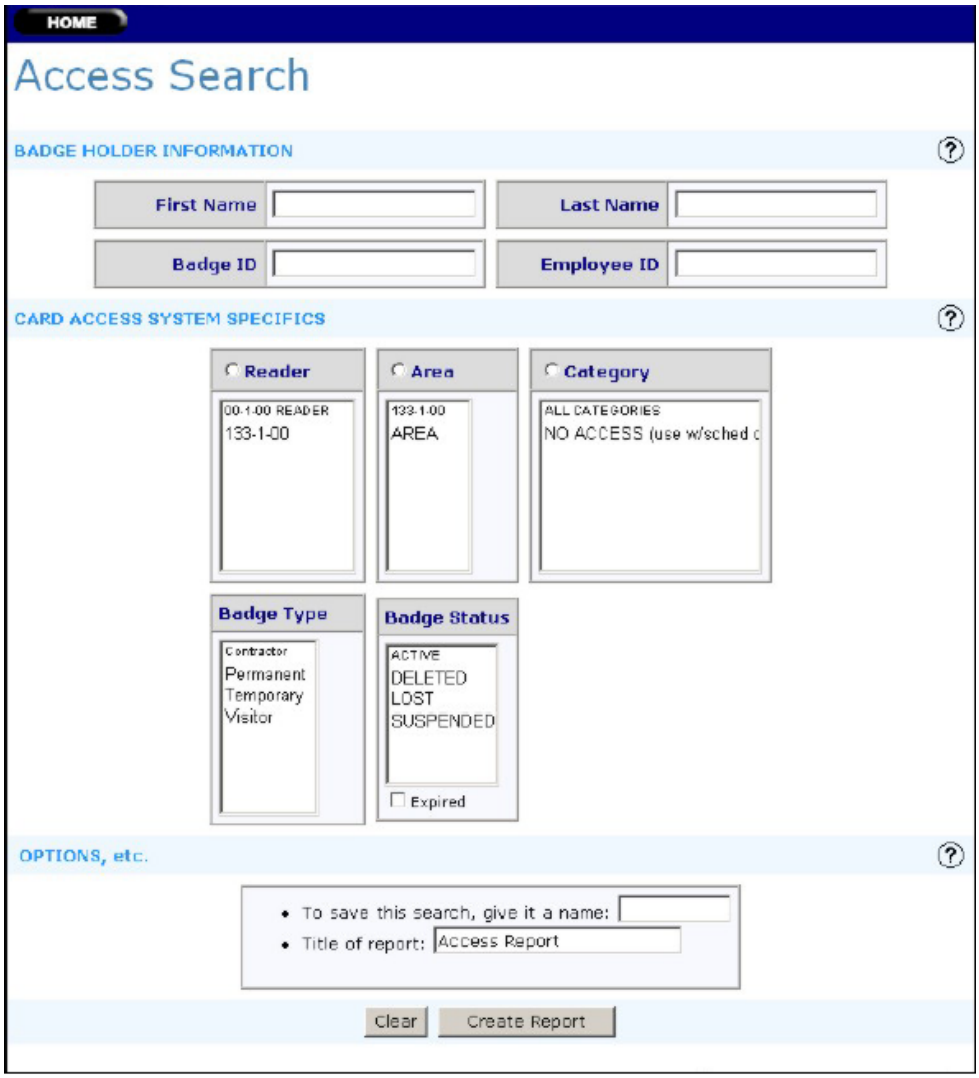
Badge Holder Information

Card Access System Specifics

Options, etc.

Clicking the “?” opens a help dialog box with information related to the associated section.

Figure 37: Access Search page



BADGE HOLDER INFORMATION: You can search by First Name, Last Name, Badge ID, or Employee ID. The fields are not case-sensitive, so uppercase and lowercase characters are treated the same. Badge ID and Employee ID produce the most accurate results, as there may be several different employees with the same first or last names. For partial matches you must use the wildcard "%." For example a search for "GOOD" will only return "GOOD," not "GOODMAN" or "GOODNER," but a search for "GOOD%" will return all of the above matches.

Note: The Badge Holder Information section cannot be used for a search on its own. It must be used in conjunction with a choice of Reader, Area, or Category from the Card Access System Specifics section.

CARD ACCESS SYSTEM SPECIFICS: In this section, you can choose selections under Category, Badge Status, Badge Type, Area, and Reader to

narrow your search. Select one or many items from one or many of these lists. If you do not select anything, then everything will be included in the search.

In the Badge Status box, the Expired check box provides additional search criteria. When checked, it retrieves data for all badges that have an expired date.

Note: The Card Access System Specifics can also be used on its own. It displays information for all badge holders that have access to the selected Reader, Area, or Category.

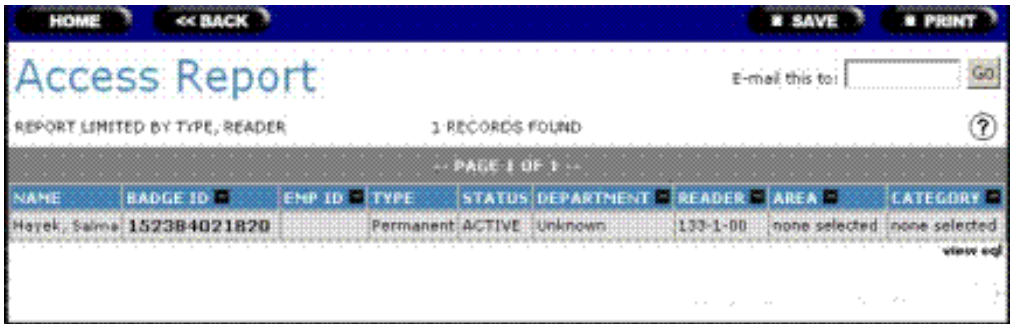
OPTIONS, etc. You have the option of saving your search. This is helpful if you find yourself running the same report often.

Clear button: Click to clear all entries from the page.

Create Report button: Click to create an Access Report based on your search criteria. The Access Report page opens, allowing you to save or print the report.

Note: The Save and Print buttons are enabled only if the number of records is greater than 0 and less than 10000.

Figure 38: Access Report page description



The report columns can be sorted by double-clicking on the column heading.

Next: If the report contains multiple pages, use the Next button to move to the next page.

End: If the report contains multiple pages, use the End button to move to the end of the report.

Home: Click Home to return to the CARMA home page.

Back: Click Back to return to the query page that you used to create the report.

Save: Click Save to open the File Download dialog box. Click Open to open the report or click Save to save the report. If you are using Microsoft Excel, the file is saved as a Microsoft Excel file. After the Excel file is saved, you will need to convert the Badge ID column to a real number format, instead of the scientific

number format to which it defaults. This is pipe delimited text and to save it into .txt file format, enter “abc.txt” as the filename after clicking on Save.

Print: Click Print to open the Access Report print dialog box. Click Print to print the report. The report is formatted so that all returned rows from the query appear on a single page.

Note: The Print button is enabled only if the number of records is greater than 0 and less than 10000.

E-mail this to: Enter an e-mail address in the space provided, and then click Go to send the report. The file is sent as a zipped attachment.

SYNC DATA Feature

Logic of Data Import

CARMA drops data for TOP_LEVEL_TABLES on every import, and then imports it from the INFORMIX_SERVER listed in the carma.conf file.

CARMA drops data for SUB_HOST_TABLES on every import, and imports it from the INFORMIX_SERVER listed in carma.conf. CARMA also imports data for SUB_HOST_TABLES from all the sub hosts listed in the host table of the INFORMIX_SERVER listed in the carma.conf file.

CARMA does not import complete data for SPECIAL_TABLES on every import, but imports the new data from the INFORMIX_SERVER listed in the carma.conf.file. CARMA also imports freshly created data for SPECIAL_TABLES from all the sub hosts listed in the host table of the INFORMIX_SERVER listed in carma.conf.

TOP_LEVEL_TABLES:

person_user, person_category, person_type, badge_user, badge_category, badge_type, category, department, facility, facility_operator, facility_profile, host, operator, badgests, xact_desc, meaning, field_desc, table_desc, fac_profile

SUB_HOST_TABLES:

Person, badge, micro, area, reader, door, alarm, inputs, input_group, terminal, area_category

SPECIAL_TABLES:

alarm_history, alarm_historytmp, operator_his, operator_histmp, badge_history, badge_historytmp

Note: For redundant configurations, the flag REDUNDANT should always be 1. Otherwise, data will be imported from both Primary and Backup Servers.

As of CARMA version 4.5, a message similar to the following is displayed to indicate completion of the sync process:

```
++++++++++++++++++++++
Updating history_counter table
Updated history_counter table
Sync Start time was Sat Nov 20 16:14:41 2010

Data Sync took 0.0666667 minutes!
Updating history counter took 0.0166667 minutes!
Total Sync Time 0.0833333 minutes!
```

SYNC DATA feature

The following flags in carma.conf are related to the import or SYNC features in CARMA.

- `IMPORT_DATA=1:` If flag `IMPORT_DATA` is 1, the data will be imported from Picture Perfect using existing logic. If the flag is 0, then the data will not be imported
- `SYNC_HISTORY=1`: If flag `SYNC_HISTORY` is 1, CARMA will compare records of last “n” days configured by the `DAYS_TO_SYNC` parameter with Picture Perfect to find and insert missing records.
- `DAYS_TO_SYNC=200`: If flag `DAYS_TO_SYNC` is 200, CARMA will check the history imported in the last 200 days if the flag `IMPORT_DATA` is set to 1.

For comparison, CARMA checks the counts of records for that date. If a discrepancy is found, it checks the records that are missing in CARMA as compared to Picture Perfect, and then retrieves those records.

The IMPORT_DATA and SYNC_HISTORY flags can be 1 at same time to import and check data daily.

The IMPORT_DATA and SYNC_HISTORY flags can be 1 at same time to import and check data daily. In this configuration it is advisable to keep DAYS_TO_SYNC as a small number, such as 1-5, to avoid processing overhead on a daily basis. In case the transaction per day is huge, DAYS_TO_SYNC should be made even smaller.

For doing sync on a large number of dates or high transaction systems, the SYNC_HISTORY flag can also be set to 1 on a periodic basis to compare the data between CARMA and Picture Perfect and to avoid daily processing overhead. The IMPORT_DATA flag can be set to 0 to avoid any import during such huge SYNC operations.

Technical Support

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact presales and technical support.

Note: Be ready at the equipment before calling for technical support.

You can reach technical support by phone 8 a.m. to 7 pm. EST, Monday through Friday.

North America:
888-437-3287

Asia
T 852-2907-8108
F 852-2142-5063

Australia
T 61-3-9239-1200
F 61-3-9239-1299

Canada
T 800-267-6317
F 613-737-5517

Europe
T 32-2-725-11-20
F 32-2-721-40-47

Latin America
T 561-998-6100
F 561-994-6572

utcfireandsecurity.com

UTC Fire & Security, 9 Farm Springs Road, Farmington, CT 06034-4065.

Appendix B
Useful Web resources

Summary

This chapter provides information on using the VI editor, a standard full-screen editor used with UNIX systems.

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Apache Website 138
Apache SSL Website 138
O’Reilly Website 138
MySQL website 138

Red Hat, Inc.

http://www.redhat.com

Official Red Hat Linux website. General information, downloads, support, and documentation of Red Hat Linux.

PHP Website

http://www.php.net

Official PHP website. General information, downloads, documentation, and developer information.

Apache Website

http://www.apache.org

The Apache project website.

Apache SSL Website

http://www.apache-ssl.org

Secure Socket Layer version of Apache website.

O’Reilly Website

http://www.oreilly.com

The leading publishers of books on various including PHP, Apache, Linux, MySQL, etc.

MySQL website

http://www.mysql.com

Appendix C
Using the VI editor

Summary

This chapter provides information on using the VI editor.

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Editing the /etc/hosts file 141

Overview

The VI editor is a full-screen editor. While there are several editors available in a UNIX environment; VI is a standard editor available on every UNIX system.

Modes

The VI editor has 3 modes: Command, Insert, and Ex.

- **Command.** When you enter the VI editor you are in Command mode. Command mode allows you to move around the document.
- **Insert.** Allows you to insert text.
- **Ex.** Used for special operations, such as saving a file and exiting.

Changing modes

The following table provides a quick reference to the key strokes required to change from one mode to another.

Table 5: Mode Change Key Strokes

FROM Mode	Key Stroke	TO Mode	Explanation
Command	i	Insert	Allows you to enter text at the cursor
Command	a	Insert	Allows you to enter text after the cursor
Command	o	Insert	Adds a blank line below the current line
Command	O	Insert	Adds a blank line above the current line
Insert	ESC	Command	Allows you to enter command mode
Command	:	Ex	Allows you to enter an Ex command.

Command mode functions

The following table lists some of the functions available when in Command mode.

Table 6: Command Mode Functions

Function	Keystroke
Insert text in front of cursor	i
Append text after cursor	a
Move down one cursor position	j

Move up one cursor position	k
Move left one cursor position	h
Move right one cursor position	l
Undo last change	u
Undo all changes to current line	U
Save file and exit	ZZ
Go to beginning of next line	+
Go to beginning of current line	0
Go to beginning of file	1G
Go to end of file	G
Scroll Forward one page	Ctrl-f
Scroll back one page	Ctrl-b
Delete current line	dd

Ex mode functions

The following table lists some of the functions available when in Ex mode.

Table 7: Ex Mode Functions

Function	Keystroke
Quit without saving	q!
Save and Quit	wq

Editing the /etc/hosts file

Follow the steps below to add the internet addresses of the Host machine and one for the Workstation.

1. At the system console, log on as root.
2. To open the /etc/hosts file using vi, type: `vi /etc/hosts`

   The beginning of the file will display. You can enter the address anywhere in the file but to make the file understandable, add the address in order.
3. To move forward one screen at a time, press Ctrl and F. Continue pressing Ctrl+F until you have reached the correct section.
4. Move to the line where you would like to enter the address. You can enter the address above or below this line.

5. To insert a blank line …

   ABOVE, press Shift+0

   BELOW, press 0
6. At the blank line enter the name and address (or address and name depending on the current format of your file).
7. Press the Esc key to move from Insert mode to Command mode.
8. Repeat steps 4 to 9 for each address you need to enter. Remember: you need one address for the Host and one for each Workstation.
9. When you have completed entering all addresses, type: ZZ Enter

   This will save the changes to the file and exit the VI editor.

Glossary

This glossary provides extended definitions of terms, which have appeared throughout the manual. Sources used include on-line computer/technology dictionary and encyclopedia references. Many such resources are available to learn more about these terms. The ones consulted here include:

www.whatis.com
www.webopedia.com

AIX. AIX is an open operating system from IBM that is based on a version of UNIX. AIX/ESA was designed for the IBM System/390 or large server hardware platform. AIX/6000 is an operating system that runs on the IBM workstation platform, the RISC System/6000.

Apache. Apache is a freely available Web server that is distributed under an “open source” license. According to the Netcraft (www.netcraft.com) Web server survey in February, 2001, 60% of all Web sites on the Internet are using Apache (62% including Apache derivatives), making Apache more widely used than all other Web servers combined. Apache complies with the newest level of the Hypertext Transport Protocol, HTTP 1.1. Free support is provided through a bug reporting system and several Usenet newsgroups.

Cron. A Cron script is a list of one or more commands to a computer operating system or application server that are to be executed at a specified time. Each command is executed when its triggering time arrives. In UNIX-based operating systems, the crontab command is a user interface command that creates or changes a file (called a crontab file). This file contains a list of UNIX shell commands, each with a specified time of execution.

Domain. A group of computers and devices on a network that is administered as a unit with common rules and procedures. Within the Internet, domains are defined by the IP address. All devices sharing a common part of the IP address are said to be in the same domain.

Firewall. A firewall is a set of related programs, located at a network gateway server, which protects the resources of a private network from users from other networks. (The term also implies the security policy that is used with the

programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources its own users have access to.

GPL. Stands for General Public License. The most widespread such license is the GNU General Public License, or GNU GPL for short. This can be further shortened to GPL, when it is understood that the GNU GPL is the one intended.

Host. In Internet protocol specifications, the term “host” means any computer that has full two-way access to other computers on the Internet. A host has a specific “local or host number” that, together with the network number, forms its unique IP address. If you use Point-to-Point Protocol to get access to your access provider, you have a unique IP address for the duration of any connection you make to the Internet and your computer is a host for that period. In this context, a “host” is a node in a network.

HTML. HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display on a World Wide Web browser page. The markup tells the Web browser how to display a Web page’s words and images for the user.

IP Address. An identifier for a computer or device on a TCP/IP (Transmission Control Protocol/Internet Protocol) network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address. Within an isolated network, you can assign IP addresses at random as long as each one is unique. However, connecting a private network to the Internet requires using registered IP addresses (called Internet addresses) to avoid duplicates.

Linux. Linux (often pronounced LIH-nuhks with a short “i”) is a UNIX-like operating system that was designed to provide personal computer users a free or very low-cost operating system comparable to traditional and usually more expensive UNIX systems. Linux has a reputation as a very efficient and fast-performing system. Linux is a remarkably complete operating system, including a graphical user interface, an X Window System, TCP/IP, the Emacs editor, and other components usually found in a comprehensive UNIX system. Linux is publicly open and extendible by contributors. Because it conforms to the Portable Operating System Interface standard user and programming interfaces, developers can write programs that can be ported to other operating systems.

RAID Server. Redundant array of independent disks; originally redundant array of inexpensive disks) is a way of storing the same data in different places (thus, redundantly) on multiple hard disks. By placing data on multiple disks, I/O

operations can overlap in a balanced way, improving performance. Since multiple disks increases the mean time between failure (MTBF), storing data redundantly also increases fault-tolerance.

SQL. SQL (Structured Query Language) is a standard interactive and programming language for getting information from and updating a database. Although SQL is both an ANSI and an ISO standard, many database products support SQL with proprietary extensions to the standard language. Queries take the form of a command language that lets you select, insert, update, find out the location of data, and so forth. There is also a programming interface.

Secure Socket Layer (SSL). A protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that's transferred over the SSL connection. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, Web pages that require an SSL connection start with https: instead of http:.

Sendmail. On the Internet, sendmail is the most popular UNIX-based implementation of the Simple Mail Transfer Protocol (SMTP) for transmitting e-mail. When a sendmail server receives e-mail, it attempts to deliver the mail to the intended recipient immediately and, if the recipient is not present, it queues messages for later delivery.

UNIX. UNIX (sometimes spelled "Unix") is an operating system that originated at Bell Labs in 1969 as an interactive time-sharing system. In 1974, UNIX became the first operating system written in the C language. UNIX has evolved as a kind of large freeware product, with many extensions and new ideas provided in a variety of versions of UNIX by different companies, universities, and individuals. Partly because it was not a proprietary operating system owned by any one of the leading computer companies and partly because it is written in a standard language and embraced many popular ideas, UNIX became the first open or standard operating system that could be improved or enhanced by anyone.

Web Server. A Web server is a program that, using the client/server model and the World Wide Web's Hypertext Transfer Protocol (HTTP), serves the files that form Web pages to Web users (whose computers contain HTTP clients that forward their requests). Every computer on the Internet that contains a Web site must have a Web server program.

X.509. The X.509 standard defines what information can go into a Certificate Authorities (CA), and describes how to write it down (the data format). All X.509 certificates contain: version, serial number, signature algorithm identifier, issuer name, validity period, and subject name.

XML. XML (Extensible Markup Language) is a flexible way to create common information formats and share both the format and the data on the World Wide

Web, intranets, and elsewhere. For example, computer makers might agree on a standard or common way to describe the information about a computer Card Access Report Management Application E.7 E product (processor speed, memory size, and so forth) and then describe the product information format with XML. Such a standard way of describing data would enable a user to send an intelligent agent (a program) to each computer maker's Web site, gather data, and then make a valid comparison.
XML can be used by any individual or group of individuals or companies that wants to share information in a consistent way.